Pearl 2000/2004

Operator's Manual

AVOLITES

Useful Avolites phone numbers:-

Avolites England

Sales and service*	(+44) (0) 20 8965 8522
Service out of hours*	(+44) (0) 831 17 8888
Fax	(+44) (0) 20 8965 0290
Email	name@avolites.com
Website	http://www.avolites.com

Distribution of Avolites products in USA:-
Avolites America

Sales and service*	(+1) 423 938 2057
Fax	(+1) 423 938 2059

*Before contacting Avolites for service enquiry please ensure that you have the product serial number and the Software version. The serial number can be found on the back of the desk and the software version can be found by turning the key to "System" and reading the version from the top line of the display.

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The small print :

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This manual was written by Tim Mitchell, Sabre Technology Ltd
http://www.sabretechnology.co.uk

TUTORIAL CONTENTS

REFERENCE MANUAL CONTENTS

Pages in the Tutorial section have numbers below 100. Pages in the Reference manual have numbers above 100.

Pearl 2000/2004

Tutorial

INTRODUCTION

1. Welcome to the Pearl

This manual is designed to help you get the most out of your Pearl console. We have divided it into two sections.

- This first section is a tutorial which gives you a step by step guide of how to carry out the most common functions of the Pearl. If you are new to the console, working through this part will give you a good introduction.

- The second section is a reference manual which tells you everything there is to know about the Pearl.

To help you move between the two sections, we have made the chapter numbering the same, so if you are using the tutorial and you want more information, just look for the same chapter number in the reference manual.

At the back of the reference manual there is a Glossary, explaining some of the technical terms used in the manual, and an Index which can be used to find what you need in either section of the manual.

This manual applies to both the Pearl 2000 and the Pearl 2004 consoles.

1.1 Setting up the Pearl

Before you can use the Pearl, you need to connect various things to it. Ensure the power is off while making these connections.

Important: Firstly check if your console has a voltage selector switch on the back of the console next to the power socket. If it has, make sure it matches your mains power. You can set it to 230V or 120V.

If you plug in the power with the switch set wrongly, you will probably blow up the power supply. This would be a Bad Thing To Do a few hours before a show.

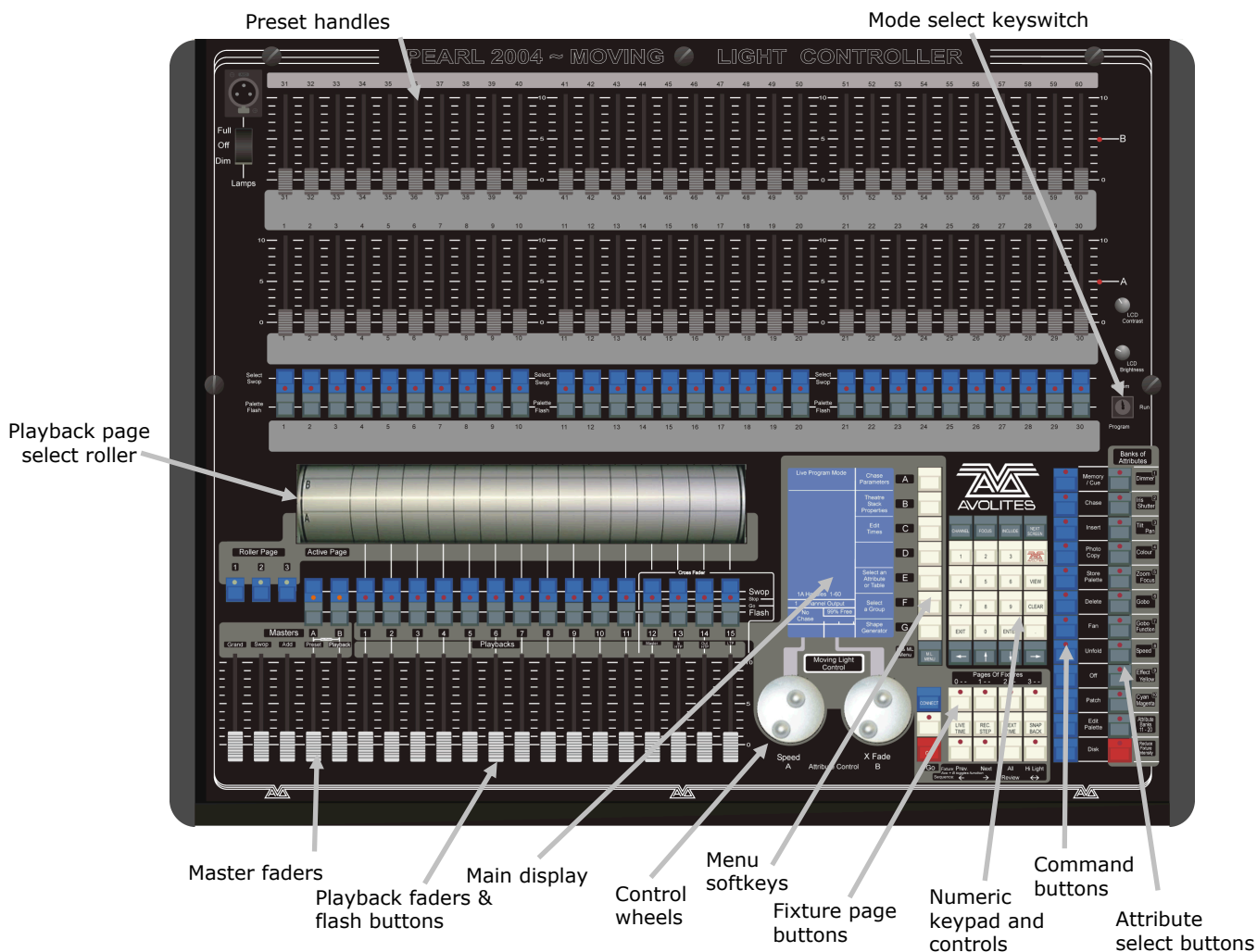Connect the mains inlet to an AC power supply.

If you are using the optional external VDU screen, connect a VGA monitor (640x480 text mode) to the VDU output on the back of the console. You don't have to use the VDU screen but it does show some additional information that is not shown on the console display.

Connect the DMX output(s) to your lighting fixtures or dimmers. The Pearl 2004 has four DMX output sockets. The Pearl 2000 has only two DMX sockets, but four DMX lines may be connected to them using a splitter cable. Chapter 1 in the reference manual has more details on DMX connections.

Plug in the desk light to the socket on the top left of the console. If you have a QWERTY keyboard, plug it into its socket. You do not have to connect a keyboard if you don't want.

Turn on the power. The console display and VDU screen (if you are using one) should come alive.

1.2   Finding your way about on the Pearl

Preset handles

Mode select keyswitch

Playback page
select roller

Master faders

Playback faders &
flash buttons

Main display

Control
wheels

Menu
softkeys

Fixture page
buttons

Numeric
keypad and
controls

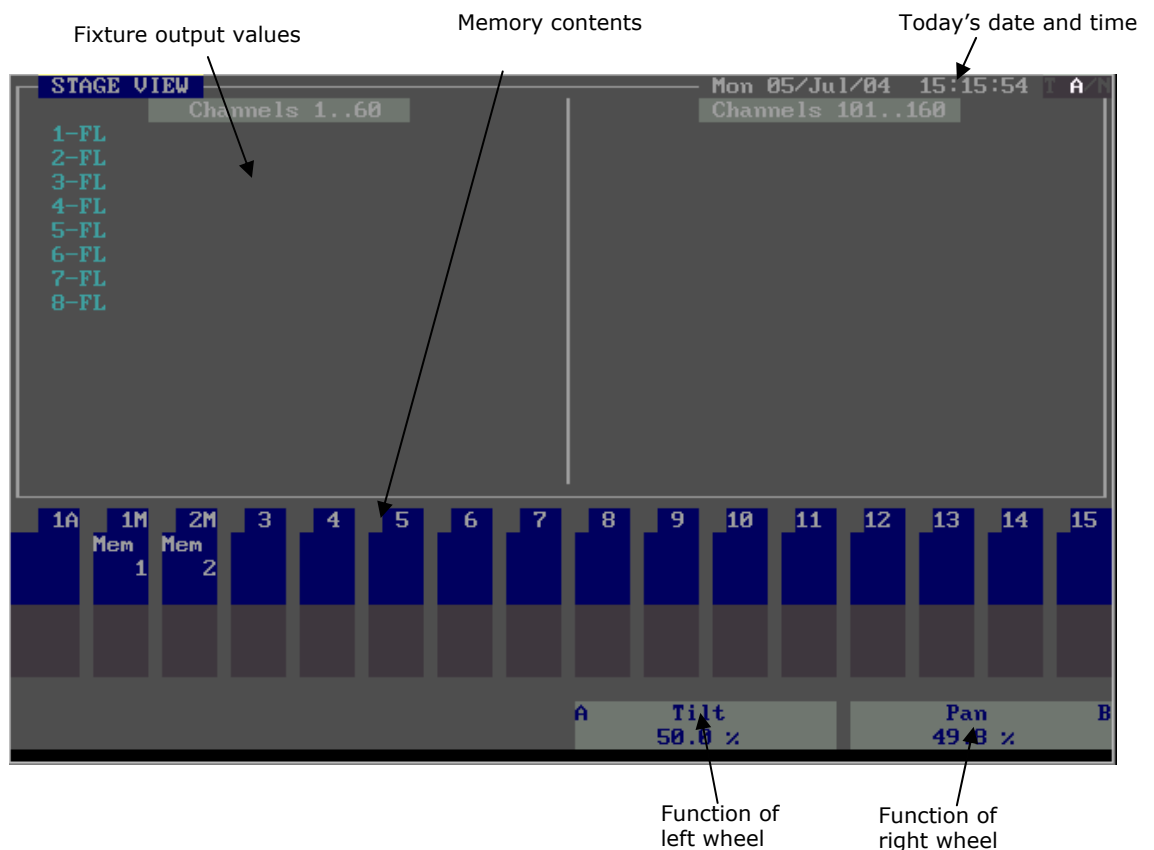Command
buttons

Attribute
select buttons

The Pearl might initially appear to have an alarming number of sliders
and buttons on it, but don't be scared of it. The main controls are:

- The **Preset Faders** are used to control individual dimmer channels
  and fixture intensities. The 2 buttons below the faders are used to
  select and flash fixtures. Each fader and buttons is called a "Handle".

- The **Mode select keyswitch** sets the operating mode of the console;
  Program for programming a show, Run for running the show and
  System for configuring the console.

- The **Page select roller** lets you select different pages of playbacks,
  and you can write the playback names on the roller so you know
  what's in them.

- The **Master faders** control the overall output of the various parts of
  the console. You will normally have these set at Full.

- The **Playback faders** and flash buttons are used to play back
  memories you have programmed, when you are running a show.

- The **Main display** is the nerve centre of the console and shows you

what is going on. The display can show various screens of information.

- The **Control wheels** are used to set control values on the fixtures, and to set chase speeds and fades.

- The **Menu softkeys** (labelled A – G) are used to select control options. The display next to the buttons shows what each one will do. The options for each key change depending on what the console is doing. Softkey commands are shown in the manual with square brackets like this: A [Chase Parameters]

- The **Numeric keypad** and other control buttons are used to enter values and change controls on the console.

- The **Fixture Page** buttons are below the keypad, which select 4 pages for the Preset Faders.

- The blue **Command buttons** are used to carry out functions such as storing memories, copying, saving to disk, etc. These buttons have lights on to indicate when they are active.

- The **Attribute select buttons** are used to select which attributes of a fixture (e.g. colour, gobo, pan, focus) are going to be controlled using the Control wheels. The buttons have lights on to show you which attributes are active. The bottom (red) button allows you to reduce the intensity of a fixture if it loses position during a show.

The **VDU screen** shows more information than the on-board displays. It is useful when setting up the console and programming shows. When entering text or numbers, what you are typing is shown only on the VDU screen. If you are short of space you can often manage without it when you are running a show.

Fixture output values   Memory contents   Today's date and time

Function of left wheel   Function of right wheel

The main part of the display shows the output of the console for one of the types of fixture you are using (you can show different things using the View button, see page 112). Across the bottom of the display, the current page of memories is shown. The "A B" at the right side of the screen shows which functions are currently assigned to the control wheels.

1.3   The Pearl simulator

You can download a free Pearl simulator from the Avolites website, which runs on a PC. This allows you to work on the Pearl even when you haven't got the real console with you. You can patch the desk, and program shows using the Avolites Visualiser, then save the show to disk and load it into the real console. The simulator operates almost exactly like the real Pearl.

1.4   What you'll need for the tutorial

The rest of the first part of this manual is a hands-on tutorial. If you have never used an Avolites console before, by working through the rest of the tutorial section you should be able to get the Pearl up and running, and be well on the way to programming and running a show with it.

The tutorial is organised in the order you'll need to do things to get the console set up and working, so try to work through it in sequence. To make the most of it, you will need a few lights set up to play with; a couple of moving lights and a few dimmers would be best. If you can't lay your hands on any real lights, you can use Avolites Visualiser to simulate some lights.
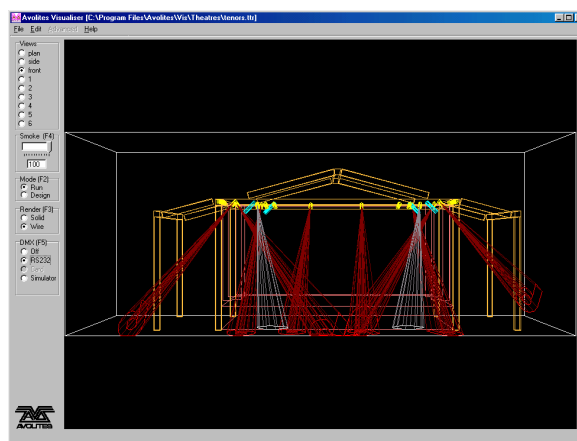
When you are preparing to start programming a new show, it's handy to have the following things.

- A lighting plan of your rig which you can scribble on

- Some blank floppy disks to save your work

- Some white or clear tape and a fine black marker pen to mark up the console so you know what's where

- Paper & pen to make notes (or a laptop, depending on how technological you are)

- Manuals or DMX tables for the fixtures you're using

- A supply of beverages of your choice

If you are new to intelligent lighting, or even new to lighting altogether, read chapter **12**, "Introduction to intelligent lighting". This explains the concepts behind digital control of lighting and will help you to understand what we are going on about in the rest of the manual. There is also a Glossary at the end of the Reference Manual which explains some of the obscure lighting words we have used in the manual.

If you are used to older Pearl software, read chapter 14, "Changes in the latest Pearl software", which gives you a quick rundown on the differences between the two consoles.

CHAPTER TWO

2.   Patching

In this chapter: how to set up the Pearl to control dimmers and fixtures.
- patching dimmers
- patching moving light fixtures
- setting addresses on the fixtures

So, you have your fixtures and dimmers all connected up with DMX cables and the Pearl connected to the end of it. (If you have a big rig, you might find it easier to learn the basics using a few dimmers and a few moving lights, and leave the rest of it till you're an expert).

First you need to allocate each fixture or dimmer to a preset fader on the Pearl, so that you can tell it which of the fixtures or dimmers you want to control at any time.

The bottom fader and the buttons below it (the picture shows some) are called the **handle** for the dimmer or fixture, because you use it to take control of the fixture. The fader will control the intensity of the dimmer or fixture, the "Swop" button is used when programming to select the dimmer or fixture. In Run mode the Flash and Swop buttons function as flash buttons.
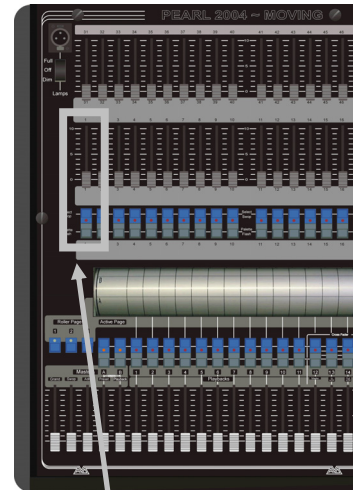
a "handle"

You also need to tell the Pearl what type of fixture is allocated to each handle. When you have entered this information, the Pearl can tell you what DMX addresses to set on your fixtures and dimmers to match the settings it is using. If you prefer, you can set your fixtures and dimmers beforehand and tell the Pearl what DMX addresses it should be using.

This setup process is called **Patching**.

You can patch up to 240 fixtures and dimmer channels on the Pearl. There are 4 "pages" of 60 handles, selected using the "Pages of Fixtures" buttons below the numeric keypad.

The Pearl controls dimmers and fixtures slightly differently, so we will look at each in turn.
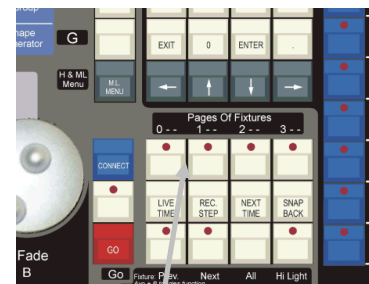
Pages of Fixtures buttons

2.1   Clearing the Pearl - Wipeall

It's always a good idea to clear the Pearl's memory before you start a new setup. This ensures that you won't get confused by any peculiar settings left by the previous user.

Clearing the Pearl

➔ *Turn the mode keyswitch to "System"*

➔ *Select softkey A [Service]*

➔ *Select softkey F [Wipe].*

➔ *Press F ["Wipeall], to confirm. The memory will be wiped.*

➔ *Turn the key to "Program" to prepare for programming.*
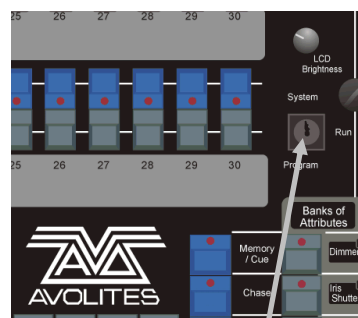
Mode keyswitch

The Pearl is now pristine and new, with all options set to default, and all memories empty, ready for you to start your show.

2.2   Patching dimmers

Each dimmer channel you want to use has to be allocated to one of the handles. Then, when you want to control the dimmer channel, you just fade up the slider.

Patching dimmer channels

➔ *Make sure the key is set to "Program"*

➔ *Press Patch (one of the blue "command" buttons).*

➔ *Press A [Dimmer]*

➔ *The Pearl will start at DMX address 001 (shown on the top line of the display). If your dimmer rack is at a different address, you can change this by typing in the new address on the numeric keypad.*

➔ *Press the blue preset "Swop" button below preset fader number 1. The fader and flash/swop buttons will become the "handle" used to control that dimmer channel.*

➔ *The Pearl will update the DMX address to the next free channel, so you can just press another button to patch the next dimmer.*

➔ *Press Exit when you have finished patching.*
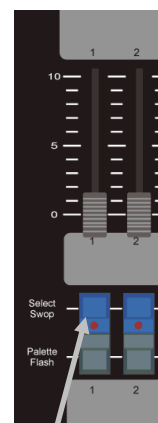
Swop button

You can now control the dimmer channel on handle 1 using the fader (the buttons do not operate as flash buttons in Program mode, only in Run mode).

If you have lots of dimmers to patch, there are some quicker ways. If you just want to patch 10 dimmers in sequence on to handles 21-30, you can do it this way:

Patching a range of dimmers to buttons

➔ *Enter Dimmer Patch mode*

➔ *Enter the DMX channel you want the range to start at, if it's different to the one the Pearl is displaying*

➔ *Hold down the Swop button of the first handle to be patched (handle 21)*

→ *Press the last Swop button (handle 30)*
→ *Release the first Swop button, then the last Swop button*
→ *Each handle will be patched in order to a dimmer channel.*
→ *Press Exit when you have finished patching.*

You can also patch more than one dimmer channel on the same handle. This can be useful when you have several lights on different dimmer channels, but you always want to control them together. For example, if you have lit an area with several spots and you just want them all to come up on one fader, this is a good way to do that. Multiple patches like this are displayed at the bottom of the VDU screen.

Patching several dimmers to the same button

→ *Enter Dimmer Patch mode*
→ *Using the numeric keypad, enter the DMX address of the first dimmer channel to be patched*
→ *Press the Swop button for the handle you want to use (this patches the first dimmer)*
→ *Using the numeric keypad, enter the DMX address of the next dimmer channel to be patched (the Pearl will have automatically increased the address by 1)*
→ *Press the Swop button again*
→ *Press Exit when you have finished patching*

You can repeat this procedure to patch as many dimmers as you like on to one handle.

So far, you've patched onto the bottom bank of faders. You can also patch onto the top bank of faders. If you have 30 or less fixtures, it's easiest to patch fixtures to the bottom faders, and your dimmers to the top faders, then you can have them all accessible without having to change the fixture page.
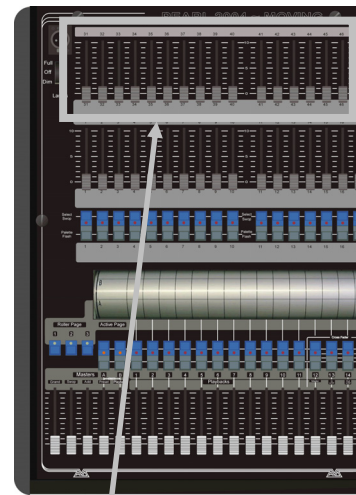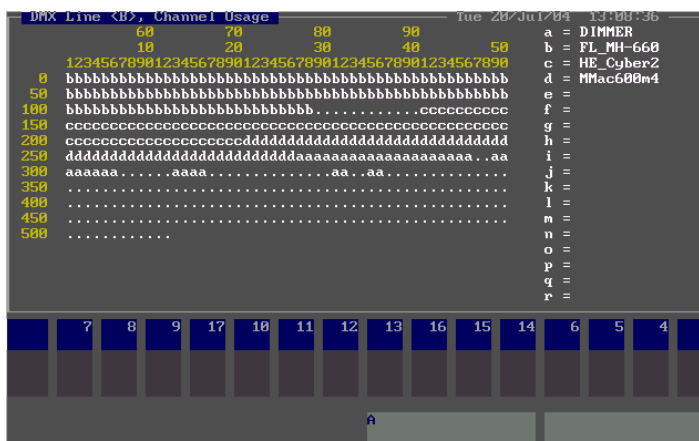

top faders

Patching to the top fader bank

→ *Patch the dimmer as normal, but hold down the AVO (shift) button while pressing the blue Swop button. The AVO button is next to the numeric keypad*
→ *The dimmer channel will be patched to the top fader*
→ *Press AVO with another Swop button to patch to another top fader*

You can patch multiple dimmer channels to the top faders by holding down the AVO button, then holding the first swop button, then pressing the last button of the range to be patched. You might need to grow a third hand, or borrow someone else's, to accomplish this.

While you are in Patch mode, the VDU screen shows a DMX channel grid to tell you which channels you have patched so far and which are free. Dimmers and fixtures are identified by different letters, dimmers are always "a".

```
DMX Line <B>, Channel Usage                    Tue 20/Jul/04  13:08:36
                 60      70      80      90              a = DIMMER
                 10      20      30      40      50      b = FL_MH-660
     1234567890123456789012345678901234567890123456789  c = HE_Cyber2
   0 bbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbb  d = MMac600m4
  50 bbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbb  e =
 100 bbbbbbbbbbbbbbbbbbbbbbbbbbbbb.............cccccccccc  f =
 150 cccccccccccccccccccccccccccccccccccccccccccccccccc  g =
 200 ccccccccccccccccccccddddddddddddddddddddddddddddddd  h =
 250 ddddddddddddddddddddddddddddaaaaaaaaaaaaaaaaaaa..aa  i =
 300 aaaaaa......aaaa.............aa..aa.............     j =
 350 ..................................................  k =
 400 ..................................................  l =
 450 ..................................................  m =
 500 ............                                        n =
                                                        o =
                                                        p =
                                                        q =
                                                        r =
```

You can also display the patch on the LCD screen by pressing View (on the numeric keypad) then C [DMX patch] (shows which handle each DMX channel is allocated to) or D [Fixture patch], which shows a list in handle order.

2.3   Patching moving light fixtures

Moving light fixtures are controlled slightly differently to dimmers; a dimmer only has one controllable attribute, intensity. But a moving light fixture can have many attributes, such as pan, tilt, colour, gobo etc. When you patch a fixture, you will see on the VDU screen that it occupies a block of DMX channels rather than just one. However, the principle is still the same.

The Pearl has personality files for most lighting fixtures in the known universe, and these are stored internally in the console. If you want to use a personality not available in the console, you can load it from a personality disk, a wide range of which can be downloaded from the Avolites website. See section 12 in the reference manual for details of how to download personalities.

Note: To use the internal personality files, make sure there is no disk in the disk drive.

Patching a fixture

➔   *Make sure there is no disk in the disk drive*

➔   *Press Patch*

➔   *Press B [Choose a fixture]*

➔   *The display will show "Please select an instrument" on the top line.*

➔   *A list of known fixtures will appear next to the softkeys after a pause.*

➔   *Use Softkeys F and G to go up and down the list and find the correct fixture, then press the Softkey next to the fixture to select it.*

➔   *The Pearl will load the fixture information (this may take a few seconds). The display shows information about the fixture.*

➔   *The Pearl will ask "Use preset palettes?".*

➔   *Press A [Yes]. (This is explained later)*

➔   *The Pearl will offer you the first free DMX address (on the top line of the display). You can change this using the numeric keypad if you want the fixture at a different address.*

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➔ *Press the Swop button on handle 11 to patch the fixture you have selected to handle 11.*

➔ *The display will show the block of channels occupied by the fixture.*

➔ *Patch more fixtures, or press Exit when you have finished.*

You can continue to patch this type of fixture at the next free DMX address by pressing the next Swop button you want to use. You can also patch a range of fixtures by holding down the first button in the range and pressing the last button, as with dimmers.

You can patch fixtures to the top faders by holding down the AVO button, but if you do this you will need to hold down the AVO button to select them when programming as well, so it's easiest to only patch dimmers to the top faders as you can control dimmers just with the fader.

If you want to patch a different type of fixture, you can change the type of fixture to be patched very easily.

To change the fixture type

➔ *Press A [Select another fixture]*

➔ *Choose the fixture type from the list on the softkeys*

➔ *Patch as before*

Note: The "preset palettes" contain 9 position, 10 colour and 10 gobo settings. You can call back these settings instantly from the palette buttons when you are programming. This allows you to select, for example, "Yellow" or "Blue" instead of setting up the value using the wheels. You can only load the preset palettes during patching.

The Pearl has four physical DMX output lines, identified as A, B, C, D. You can patch onto any of the four lines using E [Select a DMX line]. However, to keep it simple, stick to line A while you are learning.

2.4   Labelling the console

It's a good idea to stick a strip of tape above the handle Swop buttons, and write on it what is patched on each handle, such as "Mac SL", "Mac Centre" etc. This will help you greatly when programming as you try and remember where you patched everything.

2.5   Addressing lights to match the Pearl

When you are patching, it's easiest to let the Pearl allocate all the DMX addresses, then go round to the actual dimmers and fixtures and set the addresses to match the Pearl's settings. This makes sure that there are no overlaps or gaps in the DMX addresses.

You can also work out the DMX map yourself and tell the Pearl what DMX channels to use while you're patching, but then you need to make sure yourself that nothing overlaps.

The Pearl can tell you the DMX address it is using for each fixture, and in some cases can show you how to set the dip switches on the fixture. Write down the addresses for all the fixtures, then go and set them.

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Displaying the DMX address for fixtures

➔ *Press the View button (next to the numeric keys)*

➔ *Press D [Fixture Patch]*

➔ *The display will show a list of the handles to which you have patched fixtures or dimmers, with the DMX line and address (e.g. A24 is address 24 on DMX line A).*

➔ *One handle on the list has an arrow next to it. In the lower part of the screen, more information is shown for this fixture.*

➔ *Use the Arrow keys to move the arrow up and down the list, and show information for the other fixtures in the list.*

➔ *You can also press View then C [DMX Patch] to display a list of DMX channels and which fixture is patched at that address.*

2.6 Changing what you have done

If you need to change the patching you have done, it's possible to re-patch a fixture to a different DMX address using the Repatch Fixtures softkey. You can also move a fixture onto a different handle, and delete a fixture from a handle, but this loses any programming for the fixture. How to change the patching is described in detail in section 2 of the reference manual on page 120.

2.7 Patch Utilities

You can invert the operation of channels and set various other fixture-specific options using the Patch Utilities softkey. Inverting pan and tilt channels can be useful to mirror fixtures on opposite sides of the stage, or to correct for hanging a fixture the wrong way round. Section 2 of the reference manual on page 121 describes how to set these options.

2.8 Completing the patch

When you have patched all your dimmers and fixtures, press the Exit button on the numeric keypad to go back to normal mode. You have now completed the setting up of the lighting system, and it's time to get to work on programming a show. But there's one important thing to do first…

2.9 Saving the contents of the Pearl to disk

The Pearl has a built in floppy disk drive which allows you to save everything you have done. You should get into the habit of saving your show regularly to guard against that unexpected moment when the worst happens.

The disk drive is in the front left hand corner of the console, beneath
the master faders. If you're using the
console in its flightcase, you might need to
lift it slightly to access the disk drive.

It only takes a minute or so to save the
contents of the Pearl to disk. You can then
reload it if you mess up the show by
accidentally changing something, or if some
helpful person steals the Pearl you can load
your programming into a replacement
console and the show can go on.
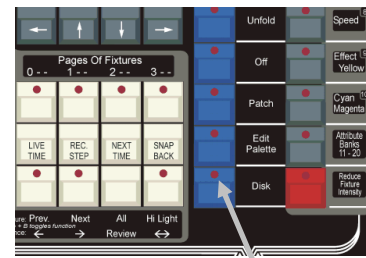
Disk button

Backing up the Pearl to disk

➔   *Press the Disk button in the bottom right hand corner of the Pearl*

➔   *Insert a blank formatted 1.44MB disk into the disk drive (anything
    on the disk will be wiped).*

➔   *Select B [Save show to disk].*

➔   *The Pearl will ask for a filename for the show. Type this on the
    QWERTY keyboard then press Enter. If you don't have a keyboard
    connected you can just accept the default showname by pressing
    Enter.*

➔   *The Pearl will ask if you want to make the show compatible with
    Sep 2000 software. Press B [No].*

➔   *The Pearl will save your current show onto the disk. The display will
    tell you when the Pearl has finished.*

➔   *The Pearl will not respond to any buttons or sliders while saving or
    loading a show. The DMX output will be frozen in its last state.*

➔   *If you need to reload the show, press Disk then A [Load show from
    disk].*

2.10   Examples

How do I patch a 6 channel DMX dimmer pack to faders 31-36?

Press Patch, then A [Dimmer]. Note the DMX address where the Pearl is
going to patch (on the top line of the display). Hold down the AVO
button. Press the blue Swop buttons for channels 1, 2, 3, 4, 5 and 6.
Let go of the AVO button. Because you were holding down AVO, the
dimmers are patched to the top set of faders, 31-36. Press Exit twice to
leave Patch mode. Finally set your dimmer pack's DMX address to
match the Pearl (if you are not sure of the address, press View then D
[Fixture patch], then use the Down Arrow button to scroll to show
Handle 31; the display shows the DMX address where the handle is
patched).

How do I patch a Mac600 to handle 10?

Press Patch, then B [Choose a fixture]. (Ensure there is no disk in the
disk drive). Press F [More] until one of the softkey options is
MMac600m4. Press the softkey for that option. Wait for the Pearl to

load the personality. When the Pearl asks "Use preset palettes?" press A [Yes]. Note the DMX address where the Pearl is going to patch (on the top line of the display). Press Swop button 10 to patch the fixture. Press Exit twice to leave Patch mode. Finally set the Mac 600's DMX address to match the Pearl (we have used the Mode 4 personality so it will also need to be in Mode 4).

CHAPTER THREE

3. Controlling dimmers and fixtures

In this chapter: how to control dimmers and fixtures manually.
- controlling fixtures and dimmers
- changing attributes
- using and creating groups
- align and fan functions
- viewing the console output

Having patched all the dimmers and fixtures you want to use, you are ready to start operating them. This chapter explains how you do this.

To manually control fixtures and dimmers, you need to be in Program mode, so ensure the key is set to Program. There's also a special Run mode which lets you "take over" fixtures during a show, which is described later.

3.1 Controlling dimmer channels

Controlling dimmer channels is simple – you just push up the fader of the handle where the dimmer is patched. Dimmers work just like a normal "preset" lighting desk on the Pearl. If you want to turn on lots of dimmer channels at the same time, you can also "select" the dimmers and use the Dimmer attribute button and control wheels as described below.

3.2 Controlling fixtures

Controlling fixtures is nearly as simple, except there are a few more functions to control than just intensity.

The first thing you have to do is to "select" the fixtures that you want to control. The Pearl then knows that any changes you make are only to be sent to these fixtures. You can select fixtures individually, or several at once.

Selecting fixtures or dimmers

➔ *Press the Swop buttons for the fixtures you want to control. (For dimmers and fixtures on the top bank of faders, hold down the AVO button and press the Swop buttons below the faders you want)*

➔ *The Swop button LEDs will light for the fixtures which are selected. They are shown in dark blue on the VDU screen.*

➔ *If you select a fixture you don't want, press its Swop button again to deselect it.*

➔ *You can select a range of fixtures by holding down the Swop button for the first fixture in the range, then pressing the Swop button for the last fixture.*

➔ *Press the ML Menu button then A [Locate Fixture] to position the selected fixtures at a central position with the light on, so you can see where they are. Dimmer channels are set to 100%.*

You can change the fixture page, if you need to, by pressing one of the other Fixture Page buttons.

You can select dimmers or fixtures patched to the top faders by holding down the AVO button and pressing the Swop button for the fader below.

3.3   Changing attributes of fixtures

Having selected the fixtures you want to control, you then need to select the attributes (pan, tilt, colour etc.) of that fixture that you want to change.

The attributes are selected using the buttons on the lower right corner of the Pearl and controlled using the wheels. The attributes you can control will vary depending on the type of fixture you are using. For dimmer channels, you can only change the "Dimmer" attribute (intensity). For scans, you can control the pan, tilt, colour, gobo and other functions.
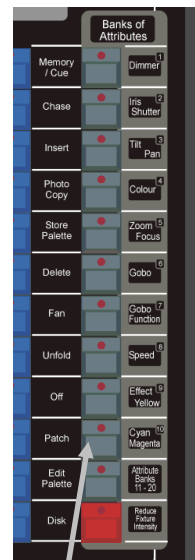
Attribute buttons

Controlling pan and tilt of a fixture

➔ *Select some fixtures using the Swop buttons*

➔ *Use the Locate Fixture function (press ML Menu then Softkey A) to position the fixtures at a central position with the lamp on (you don't have to do this, but it helps you see what's happening)*

➔ *Press the Pan/Tilt attribute button*

➔ *Control the tilt using the left hand wheel and the pan using the right hand wheel. You should see the selected fixtures move.*

➔ *The display area just above the wheels shows you which attribute is being controlled by each wheel.*
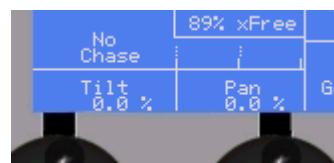
Any other attribute of the fixtures you selected can be controlled by pressing the appropriate button and turning the wheels. The display will show which functions the left and right wheels are going to control. Very few fixture types have the full range of attributes; if the display doesn't show a function when you select an attribute button, that function is not available on the fixtures you selected.

You can view the attribute settings on the LCD screen by pressing the View button then B [Fixture Attributes]. You can change which attribute you are viewing by pressing a different Attribute button.

If the fixture personality supports *range tables* and Intelligent Attribute Display is turned on (Hold AVO and press 1) then for some attributes, rather than showing a percentage value above the wheels, the current colour or gobo name will be displayed. This only happens on some fixtures.

You can use the Dimmer attribute to control the intensity channel of the fixture, or you can use the fader of the handle. The effect is the same.

Note: Once you have changed any attributes, all the fixtures will be automatically deselected the next time you press a fixture select button.

3.4   Using groups

If you've got several units of one fixture type, you often want to select them all at the same time. To avoid lots of swop-button-pressing, the Pearl allows you to put fixtures or dimmer channels into groups, which you can then use to select all the fixtures just by typing the group number. If you are using the graphics tablet you just press one button on the tablet and all the fixtures in the group are magically selected.

Making a group

➔ *Select the fixtures or dimmer channels you want to put into the group*

➔ *Press the ML Menu button, then E [Record Group].*

➔ *Type the group number 1-200 on the numeric keypad and press Enter.*

Once you have created a group, you can then quickly select all the fixtures in the group:

Selecting a group of fixtures

➔ *Type the group number on the keypad*

➔ *Press A [Recall Group].*

➔ *The fixtures in the group are selected, all other fixtures are deselected.*

If you are using the graphics tablet, you can save and recall groups with one touch of the pen. This is described in more detail in the Graphics Tablet chapter.

3.5   Copying settings from other fixtures – Align

If you've set a nice colour on one of your fixtures, and you want to copy it to all the other fixtures of the same type, the Pearl's Align function can do that. You can also use it to make all pan and tilt positions the same for a range of units or to make dimmer levels the same.

Copying settings from other fixtures

➔ *Press an attribute button to select the attribute you want to copy*

➔ *Select the fixture or dimmer channel you want to copy from*

➔ *Select the fixtures or dimmer channels you want to copy to*

➔ *Press the ML Menu button, then D [Align <attribute name>]".*

➔ *Or you can press C [Align Fixtures], to align all attributes.*

3.6   Fan mode

Fan mode automatically spreads out a selected range of fixtures to produce a fan of light beams, like rays of sunlight. The first and last fixtures of the range are affected most, and the central fixtures are affected least. The amount of fan can be set using the wheels.

> Note: The order in which you select the fixtures sets how the fan effect works. The fixtures you select first and last will be the ones which change most.

The fan effect, while normally used on pan or tilt attributes, can be applied to any attribute.

Fanning out a range of fixtures

➔ *Select the range of fixtures you want to fan*
➔ *Select the attribute to fan (pan, tilt, colour etc)*
➔ *Press the Fan button (one of the blue command buttons)*
➔ *Set the amount of fan using the wheels*
➔ *The display shows which attribute is being controlled by each wheel*
➔ *Press the Fan button again to exit Fan mode when you've finished*

You will be able to see the effect of fan mode best if you have a row of at least 4 fixtures. If you have an odd number of fixtures, the central fixture will not move in fan mode.

Remember to turn off Fan mode when you have finished (by pressing the Fan button again), or you will get confused when the controls don't do what you expect.

3.7   Examples

How do I fade up the dimmer on handles 31-36?

Just push up the faders 31-36 (make sure the Grand Master and A/B Master faders are up)

How do I make the mac 600 on handle 10 go blue and point at the cyclorama?

Select the fixture by pressing Swop button 10. Press ML Menu then A [Locate fixture] to turn on the mac600 and centre it. Press the "Cyan/Magenta" attribute button. Turn the A wheel anticlockwise to make the amount of Cyan change (you can turn B wheel anticlockwise to make the Magenta change which will give a darker blue). Press the "Tilt-Pan" attribute button. Turn the A and B wheels (the mac600 should move) until it points in the direction you want.

CHAPTER FOUR

4. Palettes

> In this chapter: how to use palettes to set colours, gobos and positions.
> - Using palettes to set values
> - Creating your own palettes
> - Setting which attributes are recorded in a palette
> - Shared and individual palettes

When you are controlling your lighting, it would be nice to instantly call back a position such as centre stage, or a particular colour like red, blue etc, rather than having to set the value on the wheels every time.

The Pearl has pages of preset values, called "palettes", which allow you to do this. The Pearl loads 10 colours, 10 gobos and 10 pre-programmed positions when you patch a fixture (unless you tell it not to when it asks "Use preset palettes?"). You can use these palettes as they are, modify them to your own settings, or save new settings.

Palettes have another big advantage. If for example you program a "centre stage spot" position as a palette, when you use this position in memories the Pearl remembers the palette you used, rather than the actual value. This means that if you move to another venue, you can just reprogram the "centre stage spot" palette entry and every memory using that position will automatically be updated. If you'd programmed all your memories directly using the wheels, you would need to go through and reposition every memory.

Palettes are also useful when you are programming using Visualiser and you don't know exactly where the lights will point; you can program your memories using palette positions, then you just update a few palettes when you get the real lights in the real venue and the show programming is done.

4.1 Using palettes to set values

The easiest way to use a palette value is by the menu on the LCD screen. We'll use the preset palettes which the Pearl loaded when you patched the fixtures to set some fixtures to Red.

Using palettes

➔ *Select the fixtures you want to control by pressing their Swop buttons*

➔ *Press the Focus button above the numeric keypad*

➔ *Select the page of palettes you want to use by pressing one of the A-F softkeys (such as [Colour])*

➔ *Press one of the A-E softkeys to use one of the palette values (such as [Red]). The value will be set to all the fixtures which are selected. The lights should turn red.*

➔ *To go back to the list of palette pages, press G [Pages].*
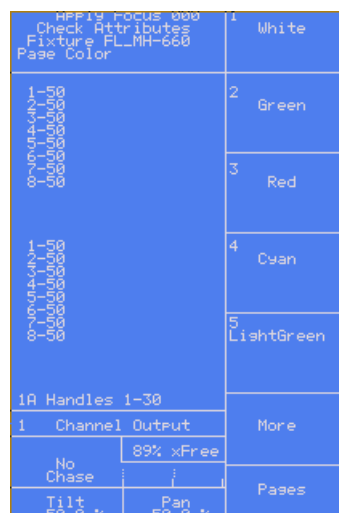
➔   *Press Exit when you have finished with palettes, as other functions don't work while in Palette Select mode*

You can also apply palettes 1-30 by pressing the grey Palette/Flash buttons below the preset faders. While you hold the button, the top line of the display shows the legend for the attribute (White, Green etc). When you release the button, the palette is applied. If you decide you don't want to apply the palette, press the Focus button before you release the grey Flash button.

4.2   Creating your own palettes

You can easily save your own palettes, or modify existing ones. We'll create a position palette.

Storing your own palette

➔   *Press Clear (next to the numeric keys) to clear all the changes you have made so far*

➔   *Select a couple of fixtures and press ML menu then A [Locate fixture]*

➔   *Press the "Tilt-Pan" attribute button.*

➔   *Position the fixtures using the wheels.*

➔   *Press the Store Palette button (one of the blue Command buttons)*

➔   *Type "21" (the palette number to be stored) on the keypad and press Enter. The position of the fixtures is stored as a palette*

You can also store a palette by pressing one of the grey Palette/Flash buttons below the presets. If you had pressed the grey button for preset 21, that would have been the same as what we did above.

4.3   What's stored in a palette

Although you can store all attributes of a fixture in a single palette, it's easiest to store some palettes which only affect colour, others which only affect position, and so on. This means when you recall a palette entry, you know which attributes of the fixture are going to change.

You do this using the Attribute buttons when saving the palette. In the example above, we had the "Tilt-Pan" attribute selected when storing the palette, so only the Tilt & Pan values were recorded.

Setting which attributes will be recorded in the palette

➔   *Press Clear to clear all the changes you have made so far*

➔   *Select a couple of fixtures and press ML menu then A [Locate fixture]*

➔   *Set a colour using the "colour" attribute button and wheels.*

➔   *Position the fixtures using the "tilt-pan" attribute button and wheels.*

➔   *Press the Store Palette button*

➔   *Press the Colour attribute button. The Colour button & the Yellow/Cyan/Magenta buttons will light, showing that these attributes will be recorded.*

➔ *Type "101" on the keypad and press Enter to store the colour.*
➔ *Press Store Palette again.*
➔ *Press the Tilt-Pan attribute button.*
➔ *Type "22" on the keypad and press Enter to store the position.*

If you press the "Dimmer" attribute button before storing, this will store in the palette all the attributes which you have changed. The lights on the attribute buttons come on to show you what will be stored.

There are ways of extracting only, say, colour information from palettes which have other attributes as well, which are described in the reference manual.

4.4   Shared and individual palettes

For some attributes, such as colour, you want to set the same control values to all the fixtures of the same type. So if you pick Red, you want the control value for "Red" to go to all fixtures.

For other attributes, like position, each fixture needs a different setting to get the light beams to point where you want.

If you only select one fixture when creating a palette, that palette is known as a "shared" palette, and the value will be available to all fixtures of that type. So to create a shared palette, you press Clear then select and modify only one fixture.

If you change more than one fixture, the Pearl creates an "individual" palette which stores a different value for each fixture. This is normally used for positioning palettes, and sometimes for image focusing. You can add positions for more fixtures to an individual palette just by saving the palette again with the new fixtures set.

Note: The Pearl may sometimes call palettes "focuses" or "preset focuses". This is the term previously used for a palette on Avolites consoles. The meaning is the same.

4.5   Examples

How do I make the Mac600 on handle 10 go Red using a palette?

Press the handle 10 Swop button to select the fixture. Press ML Menu then A [Locate Fixture] to turn it on so you can see what's happening. Press Focus then A [Color] (If softkey G option is [Pages] then press that to show the list of palette pages). Press B [Red]. The fixture should change to Red. Press Exit once you've finished applying palettes.

How do I store a palette which makes my Mac 600's point at the cyclorama?

Press Clear to clear any changes. Press the swop buttons for the Mac fixtures. Press ML menu then A [Locate fixture] to turn them on. Press the Tilt/Pan attribute button. Press the "➔" button. The first fixture will be selected. Use the wheels to point the fixture where you want. Press the "➔" button again and point the next fixture. When all fixtures are positioned, press Store Palette and type 21 on the keypad, then press Enter. The position only (because the Tilt/Pan button was selected) will

be stored in palette 21.

CHAPTER FIVE

5. Shapes

In this chapter: how to use the shape generator
- selecting a shape
- positioning
- setting size and speed
- coarse and fine spread

The Pearl, in common with other Avolites consoles, has a shape generator (sometimes known as an Effects Generator on other consoles). This allows you to quickly create exciting light shows using lots of movement and changes, with the minimum of programming.

There are a large number of pre-programmed shapes available, which can be used on the fixture's position, colour, gobo, dimmer, iris, focus and more. You can control the size, speed and positioning of the shape, and how the shape is allocated across a range of fixtures.

To understand how shapes work and how they can be spread across multiple fixtures, it's best to set up at least four fixtures next to each other. Once you have mastered the basics, you can try some more interesting arrangements.

5.1 How shapes work

A shape is a pre-programmed movement sequence which usually repeats over and over again. Typical shapes are circles, spirals, squares, etc. There are also random shapes, which do not repeat. A circle shape, for example, would cause the beam of the fixture to move in a circular path on the stage.

When you apply a shape, it works on the current settings of the fixture. So if you apply a circle to the pan and tilt attributes of a fixture, the centre of the circle will be at the current pan and tilt position. You can change the size of the circle, and the speed of the circle. By moving the pan and tilt position of the fixture, you can move the whole shape around the stage.

Shapes can be applied to other attributes of a fixture, not just pan and tilt. You can use them to create colour changes, gobo changes, iris changes and a variety of other attributes. Each shape is designed to modify one particular attribute.

5.2 Selecting a shape

Selecting a shape is very similar to selecting a value from a palette. When you choose a shape, it will be applied to all selected fixtures.

Selecting a shape

➔ *Select the fixtures you want to apply the shape to by pressing the Swop buttons (you'll need at least 4 fixtures to see the effects properly)*

➔ *Use Locate Fixtures (Press ML Menu then Softkey A) to turn on the fixtures and move them to a central position*

➜ *Enter the Shape Generator menu by pressing Softkey G (from the main menu).*

➜ *Press A [Playback a shape]*

➜ *Press A [Circle 1] to select a circle shape*

➜ *The shape will be applied to all selected fixtures.*

There are a wide range of different shapes available in the list, use Softkeys F and G to look through the different pages. "Rainbow" shapes only work on fixtures capable of colour mixing, and there are other shapes such as Iris and Focus which will only work if your fixtures have those functions.

The best way to find out what all the shapes are like is to try them out. Sometimes it's hard to describe the effect in the few letters which fit on the display.
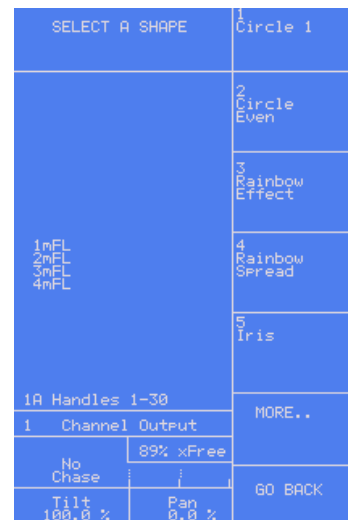
5.3 Changing the size and speed of a shape

It is easy to change the size and speed of a shape after it has first been selected.

Changing the size and speed of a shape

➜ *If you aren't already in it, enter the Shape Generator menu by pressing G [Shape Generator].*

➜ *Press D [Set wheels A=Size B=Speed]*

➜ *Control the size of the shape using the left hand wheel*

➜ *Control the speed of the shape using the right hand wheel*

➜ *The size and speed is shown above the wheels on the display.*

The minimum size is zero. Obviously, you won't see the shape, and the fixture will resume its previous settings. The minimum speed is Stop. Again, you will not see the shape moving, though it will offset the positioning of the fixture.

5.4 Changing the positioning of a shape

Pan/tilt shapes are based on the current settings of the fixture. This means that the movements will be centred around the current position of the fixture.

Changing the positioning of a shape

➜ *Select the fixtures you want to change*

➜ *Set the wheels to Size/Speed and reduce the shape size to 0 (it's difficult to see the position when everything is moving)*

➜ *Press the Pan/Tilt attribute button*

➜ *Set the position using the wheels.*

➜ *Set the wheels back to Size/Speed and change the size of the shape back to where you want it.*

Shapes on other attributes such as colour, gobo, focus, dimmer and iris are absolute and are not affected by the current attribute setting, unless the shape description includes "User" or "Usr". User shapes are relative and are centred around the fixture's current settings.

5.5 How a shape works across multiple fixtures

Shapes get more interesting (and look more impressive) when you apply them to multiple fixtures. The Pearl lets you set how a shape is spread across several fixtures.

In the case of a circle, this can vary from all fixtures moving identically (a spread of None), fixtures working in pairs (a spread of 1) through to all fixtures being distributed evenly through the shape, so the first fixture is just starting the shape as the last one finishes (an Even spread). This is the same as the number of fixtures, so if you have 4 fixtures doing the shape, a spread of 4 would be the same as an Even spread.

You can also set the Fine Spread value, which introduces a slight offset into the timing of the shape across each fixture.

Changing the spread of a shape

➔ *In the Shape Generator menu, press C [Set wheels to Spread]*
➔ *Set the coarse spread using the right hand wheel. The minimum is Even (the shape spread evenly across the fixtures), then Zero (all the same), then 1, 2, etc.*
➔ *Set the fine spread using the left hand wheel.*

To start with, keep the Fine Spread set to zero, and work with the Coarse Spread setting, or everything will get confusing.

Note: The order in which you select the fixtures determines how the shapes are applied; the "first" fixture is the one you select first and the "last" fixture is the one you select last.

5.6 Examples

How do I make my Mac600's wave around in a trendy manner?

Select the Mac600's by pressing the swop buttons. Press ML menu then A [Locate Fixture] to light them up. Press G [Shape Generator]. Press A [Playback a shape]. Press A again [Circle 1]. The fixtures will move. Press D [Set wheels A=Size B=Speed] and use the wheels to set the speed of movement and the size of the movement.

How do I make my Mac600's change colour in a rainbow?

Select the Mac600's by pressing the swop buttons. Press ML menu then A [Locate Fixture] to light them up. Press G [Shape Generator]. Press A [Playback a shape]. Press D [Rainbow Spread]. The fixtures will change in rainbow colours. Press Softkey D and use the wheels to set the speed of changes and the number of colours used (the size of the shape). Note: Rainbow shapes only work with fixtures capable of RGB colour mixing.

CHAPTER SIX

6.   Memories

In this chapter: how to record memories into the playback faders
- explanation of HTP and LTP channels
- how the Pearl works when programming
- recording and playing back memories
- playback pages
- flash button modes
- naming memories
- setting fade times for memories
- copying and clearing memories
- the include function
- editing memories
- record by fixture or by channel

So, you now know how to control your dimmers and fixtures, and how to use the shape generator. This chapter tells you how to record the wonderful effects you have created so that you can recall them at the touch of a button or fader. The Pearl has 15 playback faders across the bottom of the desk, into which you can record your effects. You select a different page of playback faders by rolling the roller above the faders. There are 30 pages, allowing you to save 450 playbacks in all.
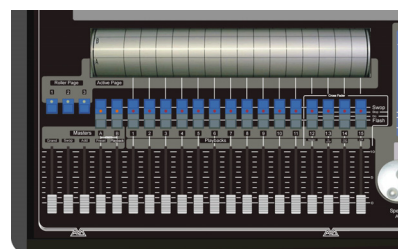
Playback faders and roller

Before we get onto the details of recording memories, there are a couple of general things about how the Pearl works. The first thing to understand is what happens when you play back more than one memory at a time, and the operation of HTP and LTP channels. It's important to understand this before going on, or nothing else will make sense.

6.1   What are HTP and LTP channels?

If two or more memories are turned on together, or if you fade out a memory, the Pearl needs to know how to output the levels from the memories. To make this work, the Pearl treats channels which control intensity differently from other moving light control channels.

Dimmer or intensity channels work on the principle of "highest takes precedence" (HTP). This means that if the same HTP channel is turned on at different levels in several memories, the highest level will be output. When you fade a memory, the HTP channels fade out.

Moving light channels work on the principle of "latest takes precedence" (LTP). This means that the latest change takes over from any other values, so the most recent memory to be turned on is the one which is output. When you fade in a memory, LTP channels do not fade, but come on at their full values, and stay there until another value is set. This is important, because when you fade in a memory you normally just want the fixtures to fade up in their proper position, colour and

gobo, you don't want the fixtures moving and changing colour (though you can do this if you need to).

The fixture personality file tells the Pearl which channels of a fixture are HTP and which are LTP. Normally, only dimmer attributes are HTP, and everything else is LTP.

6.2 How the Pearl works when programming

When you start setting dimmers and moving fixtures, the Pearl remembers what you have changed. Fixtures and dimmers you have changed are stored in "the programmer" which is a special area of memory. When you record a memory, only the settings in the programmer (i.e. the things you have changed) are stored in the memory.

When you press Clear (by the numeric keypad), all fixtures are cleared from the programmer. You should get into the habit of pressing Clear before you start to program a memory, or you can end up recording fixtures you don't want. You also need to press Clear when you finish programming, because any functions in the programmer will override playbacks.

Channels in the programmer are shown by an "m" (modified by Preset), "w" (modified by Wheel) or "P" (modified by Palette) on the console Channel Output display, and are shown in light blue on the VDU screen.

Note: Turning on a memory does not place the values from the memory in the programmer (the Include function lets you do this, see page 32). The Locate Fixture function does not place any values in the programmer either.

In the screen shown here, the Locate Fixture function has been used on fixtures 1 to 8, then the pan value has been changed on fixtures 3 to 6. Only the changed pan value is in the programmer.

6.3 Recording a memory

So now that is all out in the open, let's record a memory. The Pearl has 30 pages of 15 memories, which are controlled using the 15 faders across the bottom of the console. The page is selected using the Roller.

Recording a memory

➔ *Press Clear to clear the programmer. This ensures that you are starting with a clean slate.*

➔ *Set up a nice effect using the fixtures and dimmers. You can include shapes in a memory if you want. Remember! Only the fixtures/dimmers you have changed will be recorded in the memory.*

➔ *Press Memory.*

➔ *Roll the Roller to the segment you want to use. The active segment is the one nearest the playback faders. "A" is a good one to start on.*
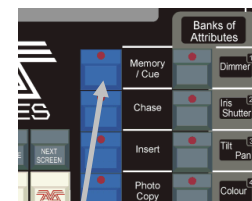
Memory button

➜ *Empty playbacks flash.*

➜ *Press the Swop button of an empty playback fader you want to use.*

➜ *The Swop button above the fader will light up to show that you have saved a memory there.*

➜ *You can write a description of the memory onto the roller surface using marker pen on a strip of tape to help you remember what's in it.*

➜ *Press Clear to clear the programmer.*

6.4 Playing back a memory

Playing back a memory is very simple. Just raise the fader. (Make sure there are no values in the programmer by pressing the Clear button, because anything in the programmer will override the playback).

Playing back a memory

➜ *Raise the playback fader.*

➜ *To stop the memory, lower the fader.*

All the HTP (intensity) channels in the memory will fade up with the fader. The LTP (movement) channels will be set as soon as the fader leaves the zero position.

When you're running your show with the key set to "Run", you can preload the LTP channels (pre-position the fixtures) by pressing the playback Flash button with the Master Add/Flash slider at zero. This can be useful if you want to position the fixtures in blackout and have them ready to turn on, rather than seeing them snap into position if you put the fader up quickly.

6.5 Changing playback pages

You can change pages to select another 15 memories simply by rolling the roller to a new segment.

If any playbacks are turned on when you change page, they remain turned on. The Swop button above the playback flashes.

If you want to use the same playback fader on a new page, you need to lower it to zero to turn off the first playback, then raise it again to turn on the new playback on the new page.

The roller has 10 segments. There are 3 buttons next to the roller allowing 3 pages of roller.

6.6 Labelling the roller & naming memories

The idea of the roller is that it gives you a handy location for writing the name of each memory you've saved. Stick a strip of tape across the roller and every time you save a memory, write a brief description of it on the roller segment above. You will then have a handy quick reference to what is in each memory.

In addition to the simple but effective technique of writing the memory name on the roller, if you're using a VDU screen the Pearl allows you to enter a legend for each memory and also for each page.

The legend for each memory is shown at the bottom of the VDU screen, so you can see at a glance what is stored in each fader.

Labelling a memory

➔ *Hold down the AVO button and press G [Set Legend].*

➔ *Press the Swop button of the playback you want to label.*

➔ *Enter the label using the external QWERTY keyboard. The VDU screen shows you what you are typing.*

➔ *Press Enter to save the label.*

➔ *You can label another memory by pressing another Swop button, or finish by pressing Exit.*

You can also label the playback pages, palette pages and palette entries using the other softkeys.

Note: If you don't have a QWERTY keyboard connected, you can enter letters using the Swop and Flash buttons on Preset Faders 1-26. The Swop buttons enter capitals and the Flash buttons enter lower case letters.

   If you don't have a VDU screen, there is no point entering memory legends as you need the VDU screen to see them. You can, however, make use of Palette names on the LCD display.

6.7   Copying a memory

Copying a memory is very fast and simple.

Copying a memory

➔ *Hold down the Flash button of the memory you want to copy.*

➔ *Press the Swop button of the playback you want to store it in*

➔ *You can change the Roller page while you are holding down the Flash button, if you want to copy a memory to a different page.*

The new memory will be a linked copy of the old one. If you change a memory which is linked, all the other memories linked to it will change too.

You can create a completely separate copy of the memory using the "Photocopy" function. Just press the Photocopy button (one of the blue command buttons) before you start the copy. If you have named the memory, the name will not be copied, indicating that it is a "new" memory.

6.8   Deleting a memory

If you want to clear a memory so you can store something else in it:

Deleting a memory

➔ *Press Delete (one of the blue command buttons)*

➔ *Press the Swop button of the playback you want to delete*

➔ *Press the Swop button again to confirm the delete.*

If the memory is linked to other memories, the others will not be

affected.

6.9 Editing memories

You can edit any part of a memory you have already saved simply by making the changes and saving the new information on top of the memory.

Editing a memory

➜ *Press Clear to empty the programmer.*

➜ *Turn on the memory you want to edit, so you can see what you are doing.*

➜ *Select the fixtures you want to change, and make the changes.*

➜ *Press Memory.*

➜ *Press the playback swop button for the memory you are editing to save the changes.*

➜ *The Pearl will warn you "A memory already exists on playback!"*

➜ *Press A [Merge memory].*

The changes you have made are saved into the memory. None of the other information in the memory is affected.

If you want to replace the memory with a new memory, you can use B [Replace memory].

If you need to remove fixtures or individual attributes of fixtures from the memory, you can use the "Off" function to do this. The "Off" function is described in the reference manual.

6.10 The Include function

Sometimes it's useful to be able to re-use some aspects of a memory you have already created in another memory. If you've created a really nice pattern of criss-crossing light beams, for example, you might want to use it again in another memory with different gobos and colours.

Normally when you play back a memory, the information is not loaded into the programmer, so you can't simply turn on a memory, modify it and save it to a new memory. The Include function lets you reload a memory back into the programmer. You can then use it in a new memory.

The Include function loads selected attributes of selected fixtures into the programmer. So, for example, if you have a memory which contains position, colour and gobo information for 8 fixtures, you can use the Include function to load only the colour information for 4 of the fixtures into the programmer. You could then "include" position information from another memory into the programmer, and build up a new memory using information from several existing memories.

Using Include

➜ *Press the Include button.*

➜ *Select the fixtures from which you want to take settings. If you don't select any fixtures, all fixtures will be used.*

➜ *Select the Attributes you want to include.*

Include button

The Dimmer attribute will include all other attributes (the lights on the buttons show which attributes will be loaded).

➔ *Press the Swop button for the memory you want to include.*

➔ *The selected attributes of the selected fixtures will be loaded into the programmer.*

You can Include an entire memory by ensuring no fixtures are selected and selecting the Dimmer attribute.

If the memory you are including contains shapes, the shapes and all the fixtures they are applied to will be loaded, whether they are selected or not.

Include is also useful when you are programming chases, which is described in the next section.

6.11 Setting fade times for a memory

You can set a fade in and fade out time independently for every memory. The fades only affect HTP (intensity) channels, and are set using softkey C for fade in and D for fade out. There is also a separate LTP timer which allows you to set movement times for fancy sweeps or colour fades, set using softkey E.

Setting fade times for a memory

➔ *Press C [Edit Time].*

➔ *Press the Swop button of the playback you want to set times for*

➔ *The display shows you the times you can set.*

➔ *Press C to set Fade In time, or D to set Fade Out time.*

➔ *Use the numeric keypad to enter the new time. Press Enter to save it.*

➔ *Press Enter when you have finished. If you press Exit, the changes you have made will not be stored.*

There are some other timing functions available as well, which are described in the reference manual.

6.12 Record by fixture, record by channel modes

Normally, if you change one attribute of a fixture, the Pearl records all the other attributes of that fixture even if you haven't changed those attributes. So if you change the pan position, the Pearl will also record the tilt, colour, gobo, iris, and so on. However, the Pearl also has a more selective mode of operation where it only records the changed attributes. You can choose the mode by holding down the Avo button and pressing Softkey C. The display shows the current setting of the option.

- **Record by fixture**: This is the normal mode of the Pearl. It means that when you record a memory, all attributes of every fixture that you have changed are recorded in the memory. So if you change only the position of a fixture, the colour, gobo, intensity and all other attributes of that fixture are recorded as well. This is useful because you know that when you recall the memory, it will look exactly as it did when you saved it. However, it can be slightly inflexible if you want to combine memories.

- **Record by channel**: This means that only attributes you have changed are recorded in the memory. So if you change the position of a fixture, only the position is recorded. When you recall the memory, the colour, gobo etc will remain as they were last set. This means you can use a memory to change the position of some fixtures while leaving the colour set from a previous memory, allowing more variety when you are running a show. It is a powerful feature but you can easily get yourself into trouble with it, so you need to be sure which attributes you need to record and which you want to "show through". When you're learning, it's best to have some memories "recorded by fixture" which turn on the fixtures in a known state, then have some colour memories to modify just the colour, or some gobo memories to set the gobo, or other attributes.

6.13   Using shapes in memories

As you would expect, any shapes you have set up will be saved as part of the memory. If you are using Record by Channel mode, there are some interesting possibilities.

If you have changed the position of the fixture, then the new position will be stored in the programmer. When you recall the memory, the fixture will start the shape at the position you set in the memory.

If you have not changed the position of a fixture, when you recall the memory the shape will run at whatever the current position of the fixture is. This allows you to make a "shape only" memory which overlays shapes on the current positioning of the fixtures.

6.14   Examples

How do I save my dimmer settings as a scene?

Press Clear to remove any changes you've made so far. Set the dimmers as you want them using the faders. Press Memory. The free playbacks will flash. Press one of the flashing Swop buttons to save the scene in the playback.

Why don't my Mac 600's move to the position I've programmed when I turn on a memory?

You have not pressed clear, and the Mac600's are already positioned in the programmer. The programmer overrides memories. If you press Clear your memories should work.

How do I save a memory using the positions from another memory?

Select the fixtures you want to use with the Swop buttons. Press ML Menu then Softkey A to turn on the fixtures. Press Include, then the Tilt/Pan attribute button. Press the Swop button of the memory whose positions you want to use. The position information for the selected fixtures will be recalled from the memory. Then save the memory by pressing Memory and an empty (flashing) Swop button.

CHAPTER SEVEN

7.   Chases

In this chapter: how to record chases
- explanation of chases
- programming a chase
- running a chase
- setting speed and crossfade
- stacks and sequence control
- editing a chase
- sound activation of chases

As well as being used for recalling static memories, the playback faders on the Pearl can also be used for recalling chases. All the same page select, copy and delete functions are available.

7.1   What is a chase?

A chase is simply a memory with a sequence of static positions. Each position is known as a "step". It is normally used to flash lights in a sequence without you having to keep pressing buttons, or to move fixtures around. Chases can run automatically, or by pressing a "Go" button. If you are using the Pearl for theatrical lighting, you can use a chase to store cues for a show. The Pearl also has a dedicated theatrical lighting mode which has a section of its own.

Don't get shapes confused with chases. A shape simply moves one attribute of the fixture around in a pattern. A chase allows you to define each attribute of the fixture in a step-by-step controlled manner.

However, you will find that using shapes saves you a lot of work, and you won't have to program as many chases as you would on a conventional lighting desk.

7.2   Recording a chase

To program a chase, you have to set up the lighting state for each step of the chase. You can either set all the fixtures and dimmers manually for each step, or you can use Include to load in the information from memories you have already recorded. Remember, if you just turn on a memory, it does not go into the programmer and won't get saved as part of a chase step.

Note: From the July 2004 version of Pearl software, you can now use shapes in a chase.

Programming a chase

➔ *Press the Chase button.*

➔ *Press the Swop button of the playback where you want to store the chase.*

➔ *Press Clear, then set up the lighting for the first step, either manually or by using "Include" on existing memories (see page 32). You can save Shapes in chase steps.*
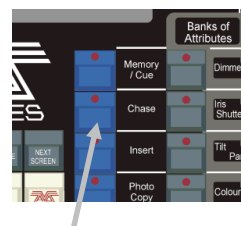
Chase button

➔ *The display shows the step number*

➔ *Press the playback Swop button to record the step. The information from the programmer is stored as Step 1 of the chase.*

➔ *Press Clear, set up the lighting for the second step, then press Swop again to save step 2.*

➔ *When you have saved as many steps as you want, press Clear, then press Exit or Softkey F to finish.*

If you don't press Clear at the end of programming, the settings for the last step will remain in the programmer and will override the chase when you turn it on, so you won't see the chase properly.

7.3 Running a chase

Running a chase is just like turning on a memory. Just raise the fader and the chase will start to run.

The HTP (intensity) channels in the chase will be controlled by the position of the fader. The other channels (LTP) will be set as soon as the fader moves above zero. When in Run mode you can pre-position the LTP channels to the first step by lowering the Add/Flash Master fader to zero and pressing the Flash button of the playback.

The chase normally starts at step 1, and runs forward. You can pause the chase and change the direction of the chase using the Sequence control buttons to the right of the wheels.
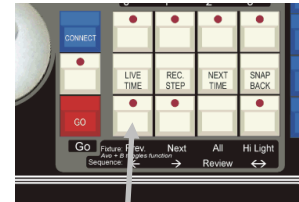
There are lots of options you can set which let you do fancy things with chases, such as Random, One-shot, special timing, and manual step mode. The details are in the reference manual.

Sequence buttons

7.4 Setting speed and crossfade

When you run a chase, the wheels are assigned to control the Speed and Crossfade of the chase (crossfade is the "slope" between steps, from instant switching to continuous fading). The display above the wheels shows the step time and the crossfade setting.

You can save a speed with the chase, so that every time you play it back, it runs at the same speed.

Saving chase speed

➔ *Turn on the chase you want, and set the speed to the setting you want.*

➔ *Press A [Chase Parameters].*

➔ *Again press A [Save Speed]*

➔ *The display will show "Saved".*

You can also save the current direction of the chase by pressing softkey B.

If you are running several chases, the wheels are assigned to the most recently selected chase. You can "connect" the wheels to one of the other chases by pressing the Connect button to the right of the wheels,

➜ *Hold down the Flash button of the chase you want to copy.*

➜ *Press the Swop button of the playback you want to store it in*

➜ *You can change the Roller page while you are holding down the Flash button, if you want to copy a chase to a different page.*

The new chase will be a linked copy of the old one. If you want to create a completely separate copy of the memory, press the Photocopy button before you start the copy.

7.8 Deleting a chase

If you want to clear a chase so:

Deleting a chase

➜ *Press Delete*

➜ *Press the Swop button of the chase you want to delete*

➜ *Press the Swop button again to confirm the delete.*

7.9 Timing, Stacks and sequence control

The most common use of a chase is as an automatic continuous sequence. However, the Pearl lets you step chases manually using the Go button, which allows you to use them for theatrical lighting cues or "One shot" chases. When you use a chase like this, it is sometimes known as a "Stack".

The Pearl has a dedicated theatrical lighting mode which is described in detail in the next chapter.

Creating a stack

➜ *Save each cue state as a step in a chase.*

➜ *Press C [Edit Times]*

➜ *Press the playback Swop button for the chase*

➜ *Press G [Links] to set LINK = OFF for the whole chase*

➜ *Press Enter to save the setting.*

➜ *Raise the playback fader to activate the chase.*

➜ *Press the Go button to run each cue.*

You can set the fade in and fade out times independently for each cue using the Live Time button.

Setting cue times on a stack

➜ *Start the chase by raising the fader.*

➜ *Press the Live Time button to set the times for the current cue.*

➜ *Use softkeys A-G to set the times you want*

➜ *Press Enter to save the settings or Exit to abandon them.*

➜ *Press the Go button to go on to the next cue.*

You can also set a text label for each cue. The Pearl will show you the label for the current cue and the next one coming up. The reference

manual tells you more details about this.

7.10   Sound activation of chases

The Pearl can use bass, mid or treble (low, medium or high) frequencies from its audio input to trigger chases. Any chase can be programmed to respond to Bass, Mid or Treble frequency triggers. There is also a master "Sound to light enable" option.

Sound mode only works with the key turned to Run, but you need to be in Program mode to set up the chase for sound activation.

Sound activating chases

➜   *In Program mode, turn on the chase to "connect" it.*

➜   *Press A [Chase Parameters]*

➜   *Press E [Sound to light] to select Sound to Light Low, Medium or High*

➜   *Turn the key to Run mode.*

➜   *Press E [Sound to light]. (This is the master sound to light enable control) The option will highlight.*

➜   *All chases with sound enabled will step in time to the sound signal*

➜   *The Speed wheel controls the maximum speed of the chase*

➜   *Press E, again, to turn off sound activation.*

Also while in Run mode you can set the speed of the connected chase manually by tapping Softkey G [Tap twice to set tempo] in time with the music.

7.11   Examples

How do I program a dimmer chase?

Create the chase by pressing Chase then one of the flashing (empty) playback swop buttons. Press Clear, and turn on the dimmers for step 1. Press the Swop button for the chase to save the step. Press clear, then turn on the dimmers for step 2, and press the Swop button to save. When you have saved all the steps, press Chase to end.

I've programmed a chase using memories but when I turn it on, nothing happens

To use existing memories in a chase, you must use the Include function to load the memory into the programmer. If you just turn on a memory and then try and save that as a chase step, nothing will be saved because the memory will not be in the programmer.

The last step of my chase doesn't play back

You need to press Clear to clear the programmer (which overrides the chase output).

CHAPTER EIGHT

8. Theatre stack

In this chapter: the Pearl's theatre mode
- Setting theatre mode
- Theatre controls
- Plotting a cue
- Naming a cue
- Setting fade times for a cue
- Jumping to a cue
- Running the show

Theatre mode makes the Pearl behave like a standard theatrical console, allowing you to program your whole show as a sequence of cues, and play it back just by pressing the Go button. Playback faders 12-15 become dedicated cue masters. The rest of the console continues to operate as normal, so you can run the main cues from the theatre mode, and spot effects from the other playback faders.

8.1 Setting theatre stack mode

In program mode, select Softkey B [Theatre stack programming], then press Enter.

Note: When theatre mode is enabled, you can't access playbacks 12-15 on any page; if you intend to use Theatre mode it is advisable not to program these playbacks. Any programs are kept and when you turn off Theatre mode you will be able to access them again.

You can get out of the Theatre menu by pressing G [Quit]. The Exit button does not operate in this mode.

To turn off theatre mode completely, press softkey B from the main menu then press D [Exit theatre programming] When Theatre mode is enabled, the swop button of Playback 12 flashes when the playback is turned off.

Theatre mode programming is not deleted when theatre mode is turned off.

8.2 Theatre controls

Fader 12 is the Master fader, controlling the overall intensity of all lights.

The Go button next to the wheels makes a cue start.

If you stop a fade part-way by pressing the Stop button, or one of the stop buttons above the faders, then Fader 13 controls the Fade In of the next step, fader 14 controls the Fade Out of the previous step, and fader 15 controls the LTP (movement) fade timer.

The buttons above 13, 14 and 15 are Stop (blue) and Go (grey) buttons for each of these functions.

8.3 Plotting a cue

You can set up the levels for a cue either by using the preset faders and

control wheels to set the levels you want, or by typing in the channel number and the level. You can store moving light positions in theatre cues as well as dimmers.

Entering dimmer levels

➔ *Press Channel (at the top of the numeric keys)*

➔ *On the numeric keypad, enter the fader/handle number of the dimmer (not the DMX address of the channel)*

➔ *Press G [At %]*

➔ *Enter the value to be set as 0 – 9, or Softkey G for Full. You can enter a decimal point and another number if you want more accurate level control.*

➔ *The channel you entered will be set to the level you entered.*

➔ *Press the Channel button to go back to the normal menu*

The softkeys offer you a few more options such as up by 5%, down by 5%, blackout.

Pressing Clear will take all channels you've set using the keypad to blackout. Any channels turned on using the faders will stay on, but will be removed from the programmer.

You can also set multiple channels to the same level using F [through]. Enter first channel, "through", last channel, "at %", level.

Entering multiple dimmer levels

➔ *Press Channel*

➔ *On the numeric keypad, enter the first dimmer handle number of the range*

➔ *Press F [Through]*

➔ *Enter the last dimmer handle number of the range*

➔ *Press G [At %]*

➔ *Enter the value to be set as 0 – 9, or.Softkey G for Full.*

➔ *The channels you entered will all be set to the level you entered.*

When you have set all the levels as you want them, type the cue number, then press D [Record Menu]. You then need to press B [Record Stage] to record all the intensity channels that are currently turned on, plus anything in the programmer, or D [Record Programmer] to record just the contents of the programmer (i.e. what you have manually changed). The cue will be saved.

It's best to use whole numbers for cues. Then if you need to insert a cue between two existing cues, you can use a fractional number in between. The Pearl will automatically increase the cue number by 1 every time you record a cue.

8.4   Naming a cue

Type the step number to be named, then press E [Set Legend]. Enter the legend on the QWERTY keyboard. While you are typing, the input is shown on the VDU screen.

The name of the live cue and the next cue is displayed in the cue list on

the VDU screen.

8.5 Setting fade times for a cue

You can set fade in, fade out and "wait" times for each cue. Press C [Set Times] to show the options. This will set the times for the current cue. You can also use the "Live Time" and "Next Time" buttons (to the right of the wheels) to set the times for the current and next cues. See page 165 for details of times.

8.6 Jumping to a cue

You can change the cue being edited by typing the cue number then pressing Enter. If you want to output this cue, press F [Cut to Live] (fade times are ignored).

8.7 Running the show

If you have just been editing, you may need to type 1 then Softkey F to set the console to cue 1.

The display above the control wheels shows the current cue number, the next cue number, and the progress of the wait and fade times for fade in, fade out and LTP.

For automatic cues, you can simply press the Go button next to the wheels. The console will carry out the fade with the times you programmed.

If you want to manually control a fade, you can use the in, out and LTP faders or Go/Stop buttons to operate the cue. The display just above wheel A shows the percentage of fade (9 - 0) left to go (shown as "5" in the picture). When Fade In, Fade Out and LTP all show "0", the console moves on to the next cue.

In HTP fade   Out HTP fade

cue numbers   LTP fade
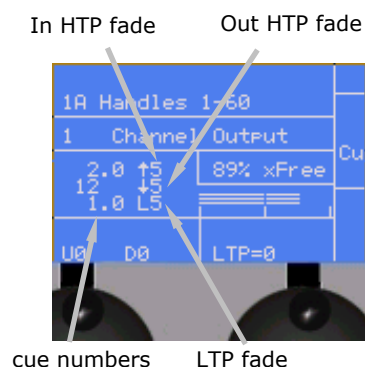
C H A P T E R   N I N E

9. The graphics tablet

In this chapter: using the graphics tablet with the Pearl
- Using the tablet
- Functions available on the tablet

The graphics tablet is an accessory to the Pearl. On "Touring" versions of the Pearl it is fitted to the right of the console in the flight case. It allows you to use a pen to select fixtures, groups, colours, and position the fixtures by simply drawing with the pen. You will be amazed how much easier your programming and show operating becomes when you use the graphics tablet.

The graphics tablet needs to be plugged into the serial port of the unit, and User Setting 7 (press AVO and Softkey C) needs to be set to "G Tablet.

9.1 Using the tablet

To use the tablet, you simply press the pen onto it. The button on the side of the pen doesn't do anything. A quick press is like pushing a button on the Pearl. You can also draw on the tablet by keeping the pen pressed down while moving it. This is used to move fixtures or change attributes.

The tablet has a paper overlay on it with pads which simulate various buttons on the Pearl. You can write your fixture names, group names, attributes, palette entries and even draw your stage layout on the overlay so that you know what's what. Spare overlays are available from Avolites.

The Pearl will behave as if you are pressing buttons on it in the normal way, so the LEDs and the displays will change as you use the tablet. Many of the functions of the Pearl are quicker and easier using the tablet. Sometimes you might find it easier to do part of the function on the tablet and part on the console. The end result is the same.
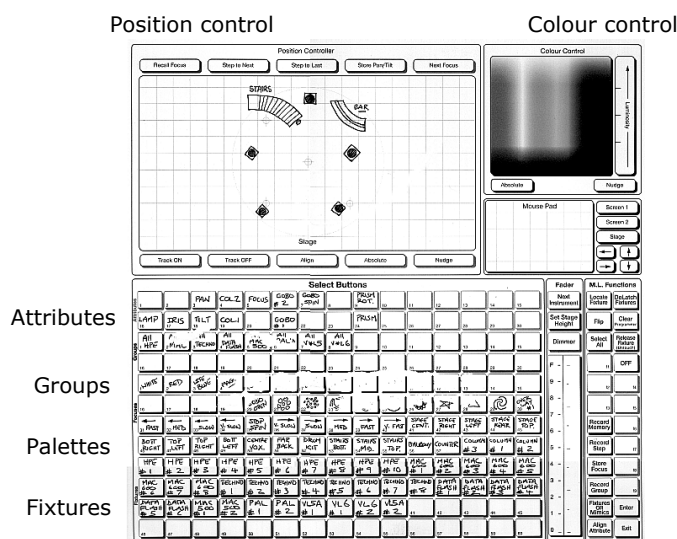
9.2   Functions available on the tablet

To select a fixture or a group, just press the pen onto one of the fixture pads or group pads. The first 60 fixtures are available on the tablet. Only the first 30 groups are available on the tablet. The Swop button LEDs on the handles will light up to show you which fixtures are selected, as if you had pressed the actual console buttons.

You can control the position of the fixture by drawing on the Stage area of the tablet.

You can "train" the Pearl so that it knows how all the lights are set up. Then when you point at the stage area of the tablet, all the lights will point at the same place on the stage. This is called "Tracking mode". The Reference manual tells you how to do this and how to use tracking mode.

If you press the pen on the Nudge pad, when you draw on the tablet the fixture will move relative to its current position. This can be useful if you want to slightly reposition a fixture. Press on the Absolute pad to turn off this mode.

You can control the intensity of the selected fixtures by drawing on the Dimmer area.

If the fixture can do CMY colour mixing, you can set the colour by drawing in the colour mix area of the tablet (you will need to set the Luminosity on the luminosity slider to maximum).

You can recall the first 60 palette entries by pressing the pen on the Focuses pads.

You can change individual attributes of selected fixtures by pressing the pen on to one of the attribute pads, then (without lifting the pen) drawing up and down on the tablet. The attribute lights on the console will come on to show you which attribute is selected.

On the right hand side of the tablet, a range of pads make some of the programmer functions are available, such as Clear and Locate Fixtures. You can also record groups and memories using the tablet exactly as if you were pressing buttons on the console. The details are in the reference manual.

The "Fixtures or Mimics" pad allows you to set whether the LEDs in the Swop buttons show you which fixtures are selected, or the intensity of the channel.

CHAPTER TEN

10. Running your show

In this chapter: running your show with the Pearl 2004
- Showtime
- Run modes
- Master faders
- Channel mimics
- Manual control during a show

10.1 It's showtime...

When you have finished programming (or you've run out of time) and it's showtime, the most important thing is to back up the show to disk (see end of section 2 on page 12 for instructions). Having done that, turn the key to Run. This means you can't accidentally change your programming when you get into a button-pressing frenzy.

10.2 Temporarily locking the console

In Run mode you can temporarily lock the console (to stop the sound guys playing with it while you nip to the loo). Type in a 4 digit number then press C [Lock Desk] then Enter. The display will show the code. Press Enter to lock it. All buttons and faders are now ignored. Re-enter the code to unlock the console.

If you repower or reset the Pearl, the lock is cancelled. It's just to discourage tampering.

10.3 Run modes

When you are running a show, there are two modes available to you, normal Run mode, which just allows you to play back memories, and Takeover run mode, which allows you to play back memories and also take manual control of fixtures. The mode also affects how the Swop and Flash buttons on the console operate.

You can select the mode by pressing A [Toggle mode]. The mode is shown on the top line of the display.

- **What's not affected**: The playback faders work the same in either mode. The Preset Faders work as handles to control the intensity of the device they are patched to.

- **Normal Run mode**: the Flash and Swop buttons on the handles and playbacks work as flash buttons. The "Flash" button adds the function into anything else which is on. The "Swop" button turns on the function, but turns off everything else while the button is held down. The programmer is cleared and you can't manually control any LTP channels.

- **Takeover run mode**: the Swop buttons on the handles allow you to select dimmers or fixtures for manual control. This lets you add to or change your programming in real time during the show. The faders still control the intensity of the dimmers and fixtures. The Flash and Swop buttons on the playbacks are disabled.

10.4 Manual control during a show ("busking")

If you have not had as much programming time as you would have liked, you might need to make up some additional effects during the show. This is sometimes called "busking".

You can create instant variations by recalling palette values to modify your existing programs. The Pearl can fade to the palette values for added effect.

You need to be in Takeover Run mode to do any of this .

Fading palettes over time in Run mode

➔   *Select some fixtures which are already in use on stage*
➔   *Press "2" (or any time, in seconds) on the numeric keypad*
➔   *Press the Focus button*
➔   *Select the Colour palette page*
➔   *Press a softkey to recall a different colour from the Colour palette*
➔   *The selected fixtures will change to the new colour over a time of 2 seconds.*

If you don't select any fixtures in the first step, the palette value will be applied to all fixtures (if this is enabled in User Setting 6, see page 192).

To save having to select fixtures, you can apply the palette to all fixtures in a memory.

Setting a palette value to fixtures in a memory

➔   *Press the Focus button*
➔   *Select the Colour palette page*
➔   *Hold down a softkey for a different colour from the Colour palette*
➔   *Press the Swop button of the memory you want to use*
➔   *Release the softkey*
➔   *The palette value will be set to all the fixtures in the memory.*

You can apply this palette to fade over a time by pressing a number before you press the Focus button.

If you apply palettes over a time, they do not get put in the programmer. This means that the next time you turn on a playback, the new playback settings will override the old palette.

If you apply palettes with time=0, then they **do** go into the programmer, and the palette value will override any new playbacks until you press Clear. If you want to apply the palette instantly, but don't want it in the programmer (so that turning on a new playback will override the palette), enter a time of 0.1.

You can also change the position of fixtures; the easiest way to do this is to use "Nudge" on the graphics tablet. This allows you to sweep selected fixtures around their programmed position by drawing with the pen, so you can alter the height of a chase or shape in real time.

You can use "Record by channel" mode when programming to set some memories to only affect position, and other memories to set colours, gobos, add shapes, and so on. By combining two or more memories you can produce a much wider range of effects than if all your memories set all the attributes. However, for this to work well you need to make sure you know what attribute is going to be affected by each memory, as if you turn on two "colour only" memories then nothing is going to light up.

10.5 Master faders

In the bottom left hand corner of the console are the Master Faders. These allow overall intensity control of the whole console.

- The Add/Flash and Swop masters control the intensity of the Flash and Swop buttons on the playbacks.

- The Preset Master controls the overall intensity of any channels turned on in the Preset faders.

- The Grand Master controls the intensity of all output from the console.

10.6 Channel mimics

If you are in normal Run mode, the LEDs on each handle mimic the intensity of the fixture or dimmer controlled by that handle (i.e. they are lit if it is turned on).

If you are in Takeover Run mode (or Program mode), you can choose between "Mimic" mode or "Fixture" mode, where the LEDs show you which fixtures are selected for manual control.

You select the mode by holding down the Avo button and pressing Softkey A. The button shows "Preset LEDs = Fixtures" (or mimics) depending on the mode. You can also change this mode using the Graphics Tablet.

CHAPTER ELEVEN

11. Advanced features

Hopefully, by working through this tutorial manual, you now know how to set up the Pearl, control fixtures with it, save memories and chases and use them in a show.

We have tried to stick to the basics, but the Pearl can do many more things than we have told you so far. The reference manual expands on all the information in the previous chapters. There's also some subjects we have not touched on yet, and these are described in the reference manual. Just so you know, they are:

• User Settings - Some console options you can change

• Setting the real time clock

• Disk functions

• Tracking - You can train the Pearl so it knows how the fixtures are positioned relative to the stage. You can then point all the fixtures at one part of the stage by clicking on the graphics tablet. Training is described in Chapter 3.2 of the reference manual and use of the graphics tablet in tracking mode is described in Chapter 9.

• MIDI - The Pearl has a very comprehensive MIDI control system

• Script files - You can tell the Pearl how to run a show from a list of instructions which you can enter or record in real time. This is described in chapter 10 of the reference manual.

• Changing the operating system - From time to time Avolites release a new version of operating software, which you can load into the Pearl

• Personality files - if the Pearl doesn't have a personality file for your fixture you can write your own. These are described in chapter 11 of the reference manual.

• Devious hardware tricks for wiping the console

12. Introduction to intelligent lighting

This section is for those who have not used intelligent lighting much before, who are put off by dip switches, lights that move unexpectedly and strange digital control systems that fly down microphone cables.

12.1 Ordinary lighting

Standard lighting consists of a variety of light bulbs connected to dimmers. The lights may be anything from par cans to theatrical lanterns, and the dimmer controls the intensity of the light. A typical controller for standard lighting has a set of sliders, and each slider controls the intensity of one dimmer using a low-voltage control signal of 0 to 10 volts. The standard way to link the sliders to the dimmers is by using a multicore cable with one core for each dimmer channel.

12.2 So what is intelligent lighting?

Intelligent lighting usually contains more functions than just intensity; a typical intelligent light, often called a "fixture", can also change colour, project different patterns (called "gobos") and direct the light beam in any direction using a movable mirror or by motorised control of the light unit itself. The fixtures are called "intelligent" because they contain a small computer which controls the movement of the internal motors in response to the control signals. Some fixtures can also listen to music and produce their own light show, sometimes synchronising themselves with other intelligent fixtures. However they are actually not all that intelligent and usually need a user to make them do something interesting.

12.3 How do you control it?

Each function of an intelligent fixture requires its own control signal, so the user can select the colour, position, gobo etc. You can use 0 to 10 volt control signals on some fixtures, but the cable carrying the control signals again has to be a multicore with one core for each function, so each fixture might need 8 or more cores in the control cable. Some of the more complicated fixtures use 20 channels.

When several fixtures are used, the number of cores needed in the control cable soon becomes large. The cable also has to split at each fixture. It all gets a bit complicated.

12.4 The DMX control system

Fortunately, there is an easy to use system for controlling intelligent lighting and dimmers. It is called DMX-512, which stands for Digital MultipleX, and it sends up to 512 control signals down a twisted pair screened cable. The cable can be simply daisy-chained from each fixture to the next. Microphone-style XLR connectors are usually used, sometimes 3-pin and sometimes 5-pin. More recently RJ45 computer network type connectors are being used.

The DMX system sends out the level for channel 1, followed by the level for channel 2, then 3, then 4 and so on, all the way up to a maximum of 512 (though not all DMX systems send out all the channels). It then

goes back to channel 1 again. All the units connected to the DMX receive all the channels, and you tell them which channels to respond to by setting the "base channel" or "DMX address" on each unit. The computer inside the fixture waits for the correct channels to come up, then reads in the levels for those channels.

Dimmers can also understand DMX; some dimmers can read it directly, others use a demultiplexer or "demux" to convert the DMX into the normal 0 to 10 volt analogue signals they are used to.

12.5   Moving light control desks

Sliders are ideal for controlling dimmers. More complicated dimmer control desks have memories to record the level of all the dimmers, so you can recall a setting without having to set all the sliders again during a show.

However, once you start controlling lights that move and change colour, sliders become less ideal, because it is the movement rather than the end level which is important. Dedicated moving light desks such as the Pearl include many helpful functions which makes the programming of intelligent lighting much easier, such as palettes of pre-programmed colours and positions, and a shape generator to create movements.

12.6   A few cautions about using DMX

DMX is a robust system which normally works very well, but sometimes it can be problematic. Here are a few tips for making DMX work well.

- DMX cabling should be twisted-pair data cable. Microphone cable is not recommended because it doesn't transmit the signal as well. You will probably get away with it, but equally you might have problems.

- Always ensure the last fixture in the DMX line is terminated. On some fixtures this can be done by flipping a switch, others are self-terminating, but often you will have to fit a terminating plug into the vacant socket on the last unit. This has a 120 ohm resistor across the DMX line and prevents data interference on the line. It might work without but…

- Don't split the DMX cable. Loop it from one unit to the next. If you have to split it, use a proper active splitter unit.

- The DMX specification says that you should not run more than 32 fixtures from one DMX line unless the fixtures are buffered or optically isolated. Either use several DMX lines (the Pearl has four) or use a DMX repeater unit. In practice, most fixtures do not put maximum loading on the DMX line and you will probably get away with using more if you have to, but the DMX signal may be weaker than it should be.

- Don't run your DMX lines near high voltage cables or neon. They may pick up interference which will stop the system working, or worse, blow up the receiver electronics in the fixtures (this really does happen, and usually at the most inconvenient moment).

CHAPTER THIRTEEN

13. Introduction to Avolites consoles

If you have used intelligent lighting before, this section explains the thinking behind how Avolites consoles work and tells you what everything is called.

13.1 Operating the console

The console has three main modes, set using the keyswitch; these are **Program** (used for programming a show, allows everything to be changed), **Run** (used when running a show, allows limited user override but no changes to programming) and **System** (used for configuring the console).

The operation of the console is based around the LCD screen. Seven **Softkeys** allow you to select the options down the right hand side of the screen. These options change depending on what the console is doing. In addition there are the blue Command Buttons which give one-button access to some functions.

13.2 Controlling lights

To an Avolites console, a light is either a **Dimmer** (single intensity control channel) or a **Fixture** (Multiple control channels)

All Fixtures have a **Personality File** which tells the console how to control the fixture. You don't need to know how the fixture works, you just tell the console what you want to do with the fixture (such as change colour) and it knows which controls to change to get the effect.

You tell the console what fixtures/dimmers you have and their DMX addresses by **Patching** them. When you patch, you allocate a **Handle** to the device. The handle is one of the Faders and Select buttons across the top of the console. You can allocate several dimmers to one handle if you want to group them, but only one fixture can be allocated to any one handle.

To control a fixture, you need to select the fixture you want to control by pressing the Select button of the handle. The button lights up to tell you that the fixture/dimmer is selected.

Additionally you can control a dimmer, or the intensity of a fixture, using the Fader of the handle. If you change pages so that the fader has been controlling something else, you will need to **Match** the fader to the current dimmer level before it operates the dimmer (normally by lowering the fader to zero then fading it up until you gain control of the dimmer).

All control of fixtures uses the two **Wheels**. To change the fixture(s) you've selected, you select the **Attribute** (colour, pan, gobo etc) you want to control using the buttons on the right hand side of the console. Then turn the wheels to change the attribute.

13.3 Programming the console

To store the settings of fixtures and dimmers, the console provides **Memories** and **Chases** (sequences). These are stored in the **15 Playback Faders** across the near edge of the console. Up to 30

different Pages of playbacks are available using the **Roller** and Roller Page buttons. The roller provides a handy surface for writing a note of what is stored in each playback.

When you save a memory or chase, the console only saves settings you have changed using the wheels (it does not save the current output state). Whenever you change a fixture using the wheels and attribute buttons, your changes are stored in a special memory called the **Programmer**. The console allows you to save just the changed attributes (Record by Channel), or if you change one attribute of a fixture it can save all other attributes of that fixture as well (Record by Fixture). Record by Channel mode is often called "Tracking" on other consoles; in this mode, fixture attributes remain in their last state unless you specifically change them.

The programmer records all changes in the console until you press the **Clear** button. You should press the Clear button before setting up the lighting for a memory, otherwise there may be all sorts of changes you don't want in the programmer, which would end up in your memory.

You can reload information from memories and chases into the programmer, if you want to save them in another memory, using the **Include** function. This function allows you to reload the whole memory, or only certain fixtures from the memory, or only certain attributes of certain fixtures.

When you play back a memory or chase, the console sets the fixtures to their programmed positions as soon as the fader rises above zero. The intensity of the fixtures, and any dimmers, rises with the fader. The intensity channels are called **HTP** (highest takes precedence) channels, because if the channel is turned on in more than one memory, the highest level will be output. The movement channels are called **LTP** (latest takes precedence) channels, because if the channel is turned on in more than one memory, the most recent change will be output.

You can program the LTP/movement channels to fade with the fader if you want to.

Avolites consoles have a **Shape Generator** (sometimes called an effects generator on other consoles). This automatically changes attributes in a preprogrammed pattern. Fixtures can be made to move their light beams around in a circle, or to fade colours, or move in and out of focus. When a shape is applied to more than one fixture, the shape can be **Spread** so that the fixtures run through in a sequence giving wave-type effects.

Shapes you apply go into the programmer and are saved if you save a memory or a chase.

Avolites consoles allow you to save frequently-used positions, colours etc. into a **Palette** (sometimes called a Focus or Preset Focus on other consoles). When you want that setting, you simply recall the palette. If you use palettes when programming memories, the console remembers the palette number rather than the actual fixture settings. This means that if you change venues, or fixtures are moved, you can quickly reprogram your position palettes and all memories using those palettes will be updated. This can save you having to reprogram many memories.

Palettes can be recalled from a menu on the console display so you can see what colour, position etc. you are going to get. This is useful when "busking" the lighting (modifying your programming) during a show.

The console allows you to fade between palettes (**Timed Palettes**) to give smooth live changes.

CHAPTER FOURTEEN

14. Changes in the latest Pearl software

If you are used to using the Avolites Pearl console, this section gives you a quick rundown of the differences between the Pearl you know and love and the new version of software. There are some exciting new features.

14.1 Wheel acceleration

16 bit attributes now always work in 16 bit mode. If you spin the wheels faster, the Pearl will skip values to change the attribute faster. If you spin the wheels slowly the attribute will change with maximum resolution. You can change the acceleration factor on the wheels, see page 194.

14.2 Preset Focuses are now Palettes

Preset Focuses are now called Palettes, in line with other Avolites consoles (except for the "Focus" button, which remains stubbornly engraved).

You can now recall Palettes from the softkeys by pressing the Focus button and the display shows you what the palette contains. This is similar to the Palette displays on the Sapphire, if you're used to that console.

You can apply a palette to all fixtures, without having to select them. If you recall a palette with no fixtures selected it will be applied to all fixtures (but the palette is not entered into the programmer).

You can apply a palette to all fixtures in a memory, by holding down the button for the palette and then pressing the memory's Swop button. Again the palette is not entered into the programmer.

Each page of fixtures now has a separate page of palettes accessible from the handle "Flash" buttons. (previously the same 30 palettes/focuses appeared on all fixture pages). This option needs to be enabled in the user settings, see page 196.

14.3 Chases can include shapes

You can now include shapes in a chase and in cues of the Theatre Stack. Each step can include different shape settings. If the shape is also present with unchanged parameters in the next step, it will continue, otherwise it will stop at the end of the step time.

14.4 Intelligent Attribute display

The display above the wheels can now show the attribute value name; for example, on a colour wheel you may see "Open", "Red" etc displayed as you turn the wheel.

This function requires Range information to be supported by the personality file for the fixture. If an updated personality file including the Range information becomes available, there is a function to update the Range table for the patched personalities in the console, so you don't have to repatch. This is in the Utilities section of the System

menu.

14.5 Legends

You can enter legends for memories, chases, groups, roller pages, palette pages and palette entries. Memory and chase legends are shown on the VDU screen, the other legends are used on both the VDU screen and the on-board LCD display.

14.6 Sound to light

Any chase can be triggered by low, mid or high frequency sound from the audio input (previously this was fixed to chases 1 2 and 3). Chases can be set to trigger on a given beat out of a number of beats, e.g. on the 2nd beat of every 4 beats.

14.7 Other features

You can temporarily lock out the controls the desk in Run mode by typing a 4 digit code and pressing Softkey C.

The Include function has been improved to allow you to include a chase step, a cue from the theatre stack, and incoming DMX from the DMX In socket.

A "locate no pan and tilt" option has been added to allow you to locate a fixture without changing its position.

Many options are now quickly accessible by holding down the AVO button.

You can selectively Wipe parts of the console; just the programming, just the palettes, the patch and the programming, or the original Wipeall option.

Pearl 2000/2004

Reference Manual

REFERENCE MANUAL CONTENTS

CHAPTER ONE

1.   Setting up the console

This chapter contains: Connecting mains power; connecting DMX lines; connecting MIDI devices; connecting audio; the disk drive; other back panel connections and controls; desk modes.

1.1   Connecting up

1.1.1   Connecting mains power

Important! Before connecting the mains power to the Pearl you must check if the Pearl has a voltage selector switch next to the mains socket; if it does, make sure it is set to match your mains supply. It can be set to 120V or 220V.

If the Pearl does not have a voltage selector switch you can safely connect it to any voltage from 80 to 260V.

If you connect mains power with the switch set incorrectly, you will probably blow up the power supply unit. If this happens you will need to shamefacedly return the console to Avolites for repair.

1.1.2   Connecting DMX lines

The Pearl can output DMX down 4 separate lines. When you patch a dimmer or fixture you can tell the Pearl which DMX line it is on. The lines are identified by the letters A,B,C,D. Normally A comes out of output 1, B comes from 2, C from 3, and D from 4, but just to add to the fun you can swap this round if you want (see Patching, section 2).

The 4 DMX outputs come out of the 5 pin XLR sockets on the back of the console. The Pearl 2004 has four separate sockets. The Pearl 2000 has only two sockets with two DMX lines on each, so you will need splitter cables to access all four lines on the Pearl 2000. They are wired like this:

DMX line	Pearl 2004		Pearl 2000	
	Socket	Pin numbers	Socket	Pin numbers
1 (normally A)	1 & 3	2=Data - 3=Data +	1 & 3	2=Data - 3=Data +
2 (normally B)	2 & 4	2=Data - 3=Data +	2 & 4	2=Data - 3=Data +
3 (normally C)	3	2=Data - 3=Data +	1 & 3	4=Data - 5=Data +
4 (normally D)	4	2=Data - 3=Data +	2 & 4	4=Data - 5=Data +

The sockets marked "1 & 3" and "2 & 4" on the Pearl 2004 have pins 4 and 5 connected to the other DMX lines as with the Pearl 2000, making the Pearl 2004 outputs pin-compatible with the Pearl 2000 if replacing one console with the other.

1.1.3 Connecting MIDI devices

The Pearl has the usual MIDI IN and OUT connections. It can read MIDI information and use it to trigger a show, and it can output MIDI information in response to user actions on the controls. This means you can record a show straight into a MIDI sequencer by operating the show yourself using the buttons and sliders. The MIDI operation of the console is described in section 13 on page 201.

1.1.4 Connecting audio

The Pearl provides a stereo audio input for sound to light functions. The stereo channels are combined internally to give a mono signal.

The Pearl 2004 has a stereo audio input socket with a gain control next to it.

The Pearl 2000 has two mono jacks and the gain control is on the front panel with the LCD contrast/brightness controls.

There is an internal link on the PCB to set the overall sensitivity of the audio inputs to mic or line level. By default the audio input is set to maximum sensitivity. See page 201 for details.

1.1.5 Other back panel connections and controls
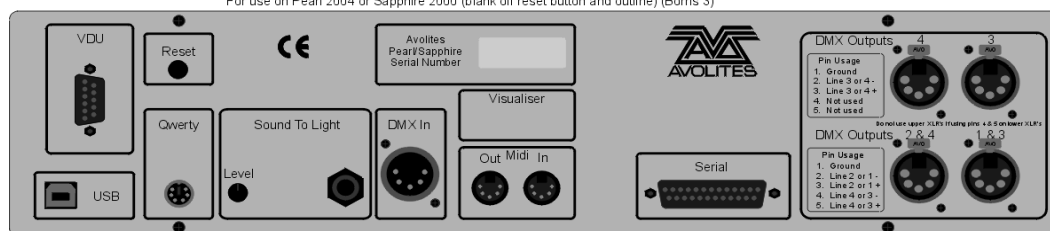
Qwerty: for connecting a standard PC keyboard. This is used for entering legends to name memories, chases and palettes. If using a keyboard you should connect it *before* you turn the power on.

VDU: for connecting a VGA display. Any standard VGA display will be OK, the console uses a 640x480 text mode. You do not have to connect the VDU screen as most information is shown on the console's on-board display, but some extra displays are available on the VDU screen which are useful when programming or operating a complex show.

Serial: is for the Stage Remote or the graphics tablet.

DMX In: allows you to capture DMX from an external system into memories on the Pearl using the Include function.

USB: for future use in the software.

Visualiser: (if fitted) allows direct connection to a PC running Visualiser; alternatively a MIDI adaptor cable can be used to connect Visualiser to the MIDI ports.

Reset button: allows you to restart the Pearl if something funny happens to it. The Pearl will come back to the same place it was in when you pressed Reset, but all playbacks will be turned off. The memory is not affected.

LCD contrast and brightness controls are on the front of the console next to the key switch. If you can't see anything on the display, first set the contrast control to a central position, then adjust it for best display. The brightness control sets the intensity of the display's backlight.

1.1.6   The desk lamp

The desk lamp plugs into the socket in the top left hand corner of the Pearl and can be switched to Off, Dim or Full using the switch next to it.

The desk lamp uses a 12V, 5W halogen lamp.

1.2   Operating

1.2.1   Operating modes

The Pearl has a key-operated switch on the right hand side of the panel which allows you to select the operating mode of the console.

When running a show, you normally select Run mode. You can run playbacks and (in Takeover run mode) manually control fixtures (see page 180). You cannot change any programming. This is the best mode if others are operating the console and you want to make sure they can't mess up your programming. Just take the key with you!!

When programming, you need to be in Program mode, which you access by turning the key to Program. *This manual assumes you are in program mode*.

System mode allows you to clear parts or all of the console using softkey F [Wipe], to access AVO mode, various diagnostics and to load a new operating system. There are more details about AVO mode in Section 13 on page **Error! Bookmark not defined.**.

1.2.2   The disk drive

The Pearl has a 1.44MB floppy disk drive which is used to load and save shows, personality files and system software. The standard PC disk format is used, so you can transfer data to and from your PC. You can use the smaller 720KB disks, but large shows may not fit!

You should get into the habit of backing up your show to disk regularly to guard against that moment when something goes wrong. It doesn't take long.

1>   Press the Disk button in the bottom right hand corner of the Pearl

2>   Insert a blank formatted 1.44M disk into the disk drive.

3>   Press B [Save show to disk]. Enter a name on the QWERTY keyboard (or press Enter on the console to use the default name). The Pearl will save the show.

4>   To reload the show, use softkey A [Load show from disk].

Other disk drive functions are available when you have pressed the Disk button. The disk drive functions are described in section 13 on page 194.

1.2.3   The front panel controls

Preset handles

Mode select keyswitch

Playback page
select roller

Master faders

Playback faders &
flash buttons

Main display

Control
wheels

Menu
softkeys

Fixture page
buttons

Numeric
keypad and
controls

Command
buttons

Attribute
select buttons
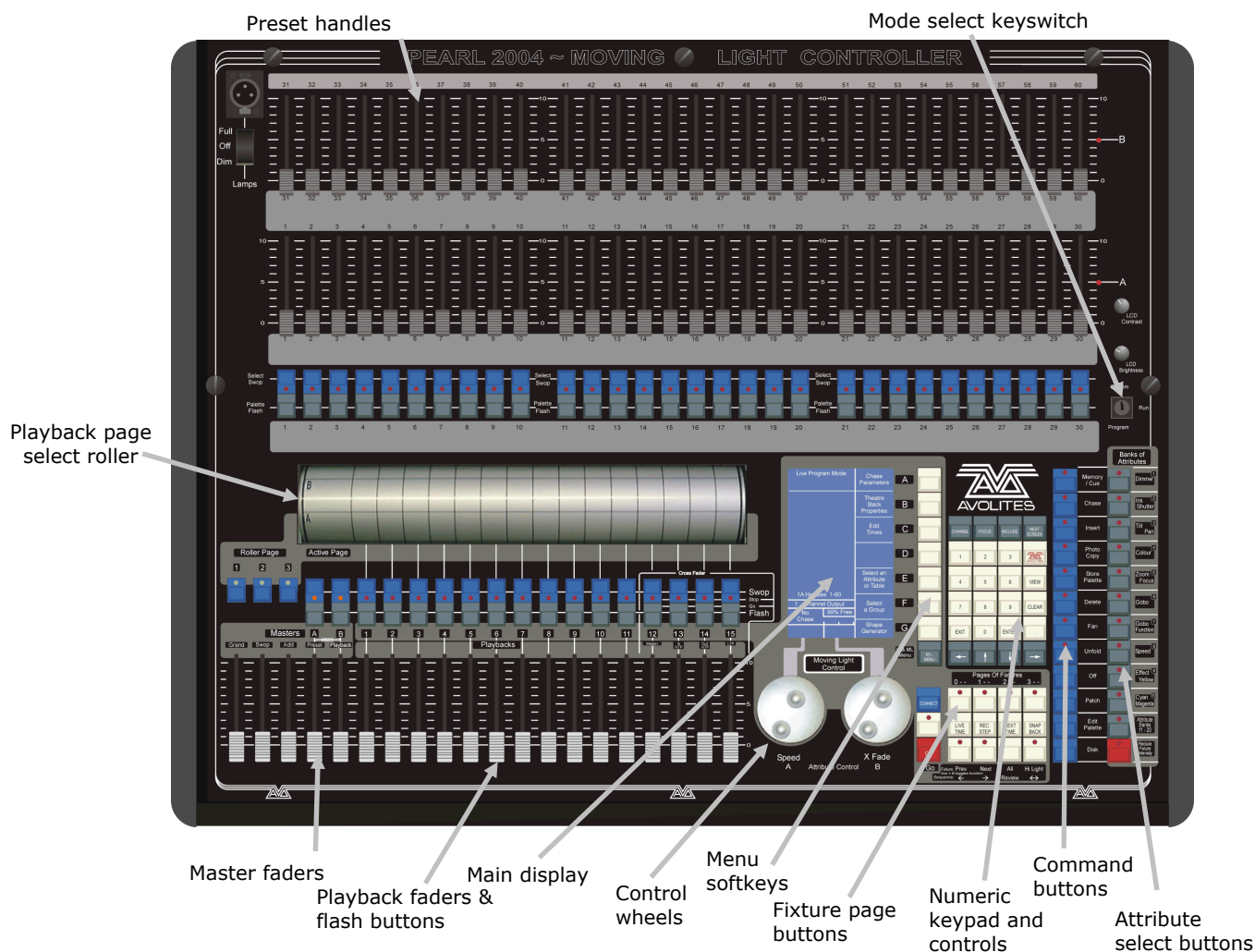
- The **Preset Faders** control individual dimmer channels and fixture intensities. The 2 buttons below the faders select and flash fixtures. Each fader and buttons is called a "Handle".

- The **Mode select keyswitch** sets the operating mode of the console; Program for programming a show, Run for running the show and System for configuring the console.

- The **Page select roller** lets you select different pages of playbacks, and you can write the playback names on the roller so you know what's in them.

- The **Master faders** control the overall output of the various parts of the console. You will normally have these set at Full.

- The **Playback faders** and flash buttons are used to play back memories you have programmed, when you are running a show.

- The **Main display** is the nerve centre of the console and shows you what is going on. The display can show various screens of information.

- The **Control wheels** are used to set control values on the

fixtures, and to set chase speeds and fades.

- The **Menu softkeys** (labelled A – G) are used to select control options. The display next to the buttons shows what each one will do. The options for each key change depending on what the console is doing. Softkey commands are shown in the manual with square brackets like this: A [Chase Parameters]

- The **Numeric keypad** and other control buttons are used to enter values and change controls on the console.

- The **Fixture Page** buttons are below the keypad, which select 4 pages for the Preset Faders.

- The blue **Command buttons** are used to carry out functions such as storing memories, copying, saving to disk, etc. These buttons have lights on to indicate when they are active.

- The **Attribute select buttons** are used to select which attributes of a fixture (e.g. colour, gobo, pan, focus) are going to be controlled using the Control wheels. The buttons have lights on to show you which attributes are active. The bottom (red) button allows you to reduce the intensity of a fixture if it loses position during a show.

1.2.4   View screens

The Pearl can display a wide range of different information screens on its inbuilt LCD and on the external VDU screen.

LCD views

- Channel Output: Press View then Softkey A. Shows the output of the selected attribute for each handle. You can change the attribute by pressing a different attribute button (Dimmer, tilt/pan etc). The display only shows the first 30 handles, press the current Pages Of Fixtures button to show 31-60.

- Fixture attributes: Press View then Softkey B. Shows which attributes of the currently selected fixture are allocated to wheel A and wheel B. The view will be blank if no fixtures are selected.

- DMX Patch: Press View then Softkey C. Shows which fixture each DMX output channel is patched to, the attribute of that fixture, and the actual DMX value being output on that channel. Use the arrow keys to show different pages of the patch.

- Fixture Patch: Press View then Softkey D. The top part of the display shows a list of handles with the fixtures patched to them. An arrow shows the active fixture; some fixture types will display
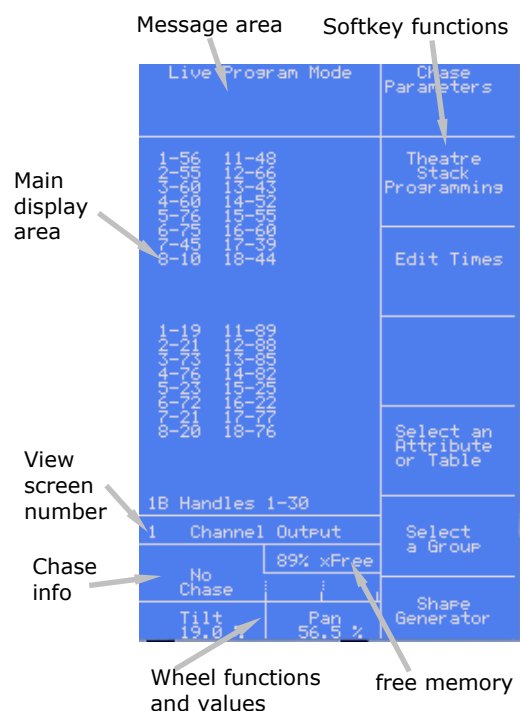
further information (such as how to set the fixture's dip switches) in the bottom part of the display.

- Chase times: Press View then Connect. If a chase is running the display will show information about the steps in the current chase. If no chase is running the display will show "No chase".

- Playback status: Press View then 7 then Enter. The display shows which playbacks are programmed (with a star), which are active and whether they are running a memory or a chase.

VDU screen views

Press Softkey G to switch the menu to the VDU view menu. Press Softkey G again to switch back to the LCD view menu.
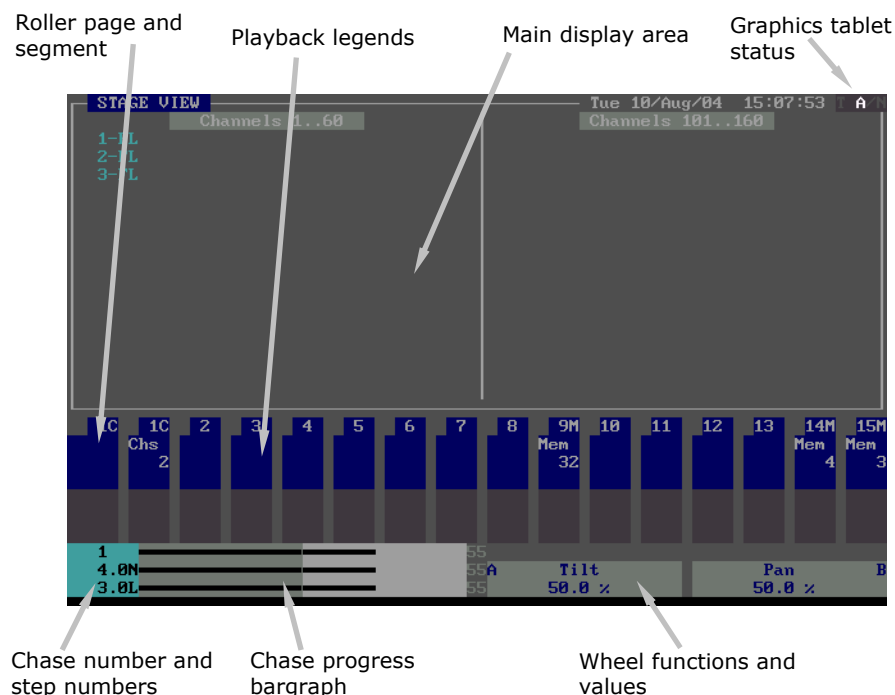
- Stage Intensities: Press View then Softkey A. Shows the intensity of each handle/fader (the numbers shown are handle numbers not DMX channel numbers)

- Stage fixtures: Press View then softkey B. Shows the output of each attribute for the different fixture types patched. Use the arrow keys to select which fixture type you are looking at (deselect all fixtures or the arrow keys will just change the fixture selection). At the bottom of the main display window, the display shows which fixture type is selected (in blue).

- Fixtures and attributes: Press View then softkey C. Displays the selected attribute for each fixture. Press a different Attribute button to show other attributes.

- View programmer: Press View then softkey D. The display shows fixtures which are in the programmer (on the left) and the attributes which are in the programmer (on the right). The desk controls do not operate while you are viewing the programmer, you need to press Exit to return to normal.

- View Shapes: Press View then softkey E. The display shows

information about active shapes.

- View Fixture Notes: Press View then softkey F, then select a patched fixture type from one of the softkeys. Fixture notes from the personality file (if it contains any) will be displayed on the VDU. Press Exit to get back to normal.

CHAPTER TWO

2. Patching

This chapter contains: Fixture handles; patching dimmers; patching moving light fixtures; checking the patching; changing the DMX address; moving a fixture to a different handle; deleting a patched fixture; patching options.

Patching is the process where you tell the Pearl

- What type of lighting units you have connected to it
- What DMX addresses they are operating at
- Which DMX output line each unit is connected to (there are 4)
- Which "handles" (control sliders) you want to use to access them

You can either patch the DMX channels on your console to match your lighting rig, or set up the console first and then set the lighting rig to match.

The Pearl must be in Program mode before you can patch.

2.1 Create

2.1.1 Fixture handles

Handles (Preset faders)

The Pearl can control up to 240 intelligent fixtures or dimmer channels. To do this it has 4 pages of 60 control "handles". The handles are located in 2 rows of 30 along the top of the console. Each handle consists of:

- a slider, used to set the intensity of the fixture or dimmer patched to the handle,
- a "Swop" button which is used in program mode to select the fixture
- a "flash" button which is used to select Palettes and to flash the channel in Run mode.

The top bank of 30 sliders does not have buttons and is accessed using the Swop button of the slider below while the AVO button is held down acting as a "shift" key.

The fixture page buttons are located just to the right of the wheels. Fixtures 1-30 are on page 0--, Fixtures 101-130 on page 1--, 201-230 on page 2—and 301-330 on page 3--. You can change the fixture page at any time.

The Pearl also allows you to allocate fixtures and dimmers to Groups, which can be useful if you usually select the same set of fixtures together. Groups are described in the next chapter.
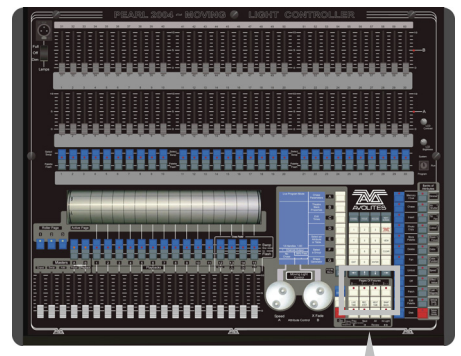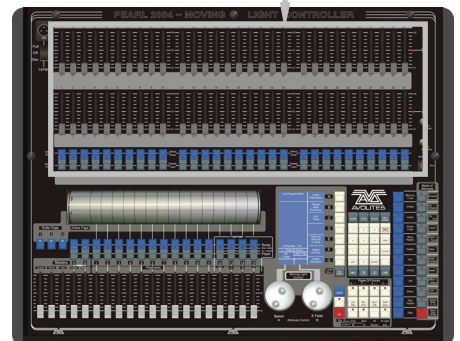
Pages of fixtures buttons

2.1.2   Patching dimmers

Each dimmer channel is allocated to one handle. If you want to link dimmers together, you can allocate several to the same handle.

1>   Press Patch, then A [Dimmer]

2>   On the top line of the display, the Pearl shows the DMX address it is going to patch at. You can change this by typing a new address on the numeric keypad. You can also use softkey E [Select a DMX line] to patch onto one of the other 3 DMX output lines.

3>   To patch a single dimmer, press a handle Swop button. To patch a range of dimmers, hold down the Swop button for the first dimmer in the range, then press the last Swop button in the range. The range of dimmers will be patched to sequential DMX addresses.

4>   To patch another dimmer to the same handle, enter the new DMX channel and press the Swop button again

5>   Repeat from step 2 for other dimmers.

- The VDU screen will show the channels which have been patched.

- You can patch multiple dimmers onto the same handle by typing the DMX address of the next dimmer to be patched and pressing the Swop button again.
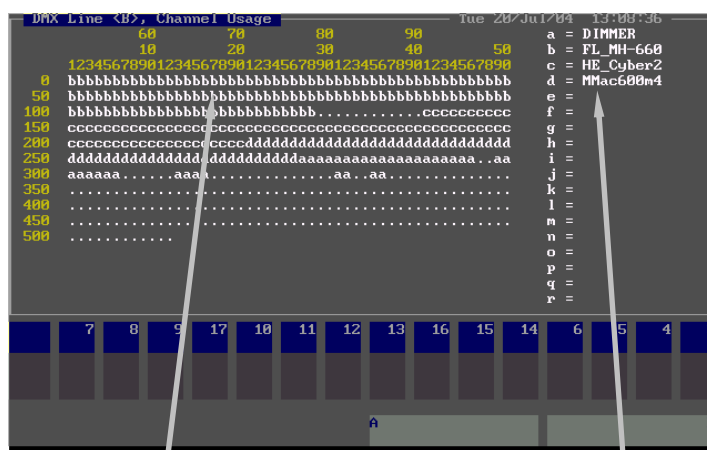
Grid showing usage of DMX channels

Devices patched

- You can patch dimmers to the top faders (31-60) by holding down the AVO button before pressing the Swop button. This allows you to patch up to 60 dimmers or fixtures on one page. It is often convenient to use the top faders for dimmers and the bottom faders for fixtures allowing you to keep all your fixtures and dimmers on one fixture page.

- When in Dimmer Patch mode you can set options for dimmer channels which are going to patch. You can set the "Full on" level to less than 100% using option A, and select a different dimmer response curve using option B. To use the "User curve" setting you need to load in a user curve, see page 194. These settings affect all dimmer channels you patch afterwards, until you change the settings again. Channels you have already patched are not affected.

2.1.3   Patching moving light fixtures

Moving light fixtures are more complicated to patch than dimmers because they have more attributes to control, such as pan, tilt, colour etc., where a dimmer channel just has intensity. When you patch a fixture, you will see on the display that it occupies a block of DMX channels rather than just one.

The Pearl uses a "personality" system to control fixtures. There is a personality file in the Pearl for most types of fixture, which tells it what attributes are available and how to control them. If the Pearl does not have the personality for your fixture, you can download a wide range of personalities from the Avolites website onto floppy disk and load them that way. If you use fixtures often you can add them to the internal store. In the unlikely event that no personality exists for the fixture you are using, Avolites will create one for you. You can also create the file yourself if you have some programming abilities. See chapter 12 on page 206 for details of how to find personalities.

Note: The Pearl holds all the personalities in an internal "cache" file. If the console memory gets totally wiped you might need to reload the file, how to do it is described on page 196. You can also use a Personality Disk in the disk drive.

If you are using the internal personality cache, ensure there is no disk in the disk drive.

1> *Press Patch, then B [Choose a Fixture].*

2> *The Pearl will read the personality files, then display "Please select an instrument". A list of known fixtures will appear next to the softkeys after a pause.*

3> *Use F [More] and G [Back] to go up and down the list and find the correct fixture, then press the softkey next to the fixture to select it.*

4> *The Pearl loads the fixture information. The display shows details of the fixture.*

5> *The Pearl will ask "Use preset palettes?". Press A [Yes]. This loads a standard set of positions, colours and gobos into the Palette pages which can be useful when programming. If you say No now, you can't load them later.*

6> *On the display, the Pearl shows the DMX address it is going to patch at. You can change this using the numeric keypad. You can also press E [Select a DMX line] to patch onto one of the other 3 DMX output lines.*

7> *Press an unused handle Swop button to patch the fixture. The VDU screen will show the block of channels occupied by the fixture. If you want to use a different fixture page, select the new page first.*

8> *Repeat from Step 7 to patch more of this type of fixture.*

9> *Press A [Select another fixture] and repeat from Step 3 to patch a different type of fixture.*

- You can patch a range of fixtures by holding down the first and last Swop buttons of the range, the same as for dimmers.

- Unlike dimmers, you cannot patch more than one fixture onto a handle. If the handle is already used, the patch will fail. Use a different handle or delete the fixture already on the handle if you don't want it any more.

- Some fixtures can only be patched at certain DMX addresses. This is usually described in the fixture instruction manual. If this information is included in the fixture personality, the Pearl will not allow you to patch the fixture at an illegal address, and will offer

the next valid address instead.

- If you are patching a fixture which uses a separate dimmer channel such as a VL5™, you can patch the dimmer channel onto the same handle as the moving light part of the fixture, so you can control it all together. This is called a *Pending dimmer*.

2.1.4 Checking the patching

Having set the Pearl, you need to ensure that your lighting rig is set up to match the Pearl by going round your rig to set the DMX addresses.

You can display the DMX settings on the Pearl like this.

1> *Press the View button next to the numeric keys*

2> *Press D [Fixture Patch]*

3> *The display shows a list of the handles to which you have patched fixtures or dimmers, with the DMX line and address (e.g. A24 is address 24 on DMX line A).*

4> *The top handle on the list has an arrow next to it. The lower part of the display shows more information for this handle, including dip switch settings if the fixture personality includes this information.*

5> *Use the up-down cursor arrows to change the selected fixture. The left-right cursor arrows will show you another page of handles.*

6> *Repeat from Step 4 to view other fixtures.*

- Press View, then C [DMX patch] to display a list of all DMX channels, what they are allocated to and the current output. The cursor arrows scroll through the list.

- Press View then a handle Swop button to display the settings for the fixture patched to that handle.

- You do not need to be in patch mode to view this information, you can do it at any time.

2.2 Edit

2.2.1 Changing the DMX address of a fixture

You can re-patch a fixture to a different DMX address or a different DMX output line. All programming is kept.

1> *Press Patch (if you're not already in Patch mode).*

2> *Press E [Repatch Fixtures].*

3> *Use the numeric keypad to enter the new DMX address of the fixture. If you want to change the DMX output line, press E [Select a DMX line] and choose a new output line by pressing A B C or D.*

4> *Press the handle swop button for the fixture to patch that fixture at the new address.*

5>   *Press Enter to confirm the change.*

6>   *Repeat from step 3 if you want to change other fixtures.*

- If the new DMX address was already used by another handle, the fixture or dimmer on that handle will be "parked". All programming for the handle is preserved, but you need to patch it to a new DMX address using the above procedure before you can use it again. If you view the fixture patch as described above, the display will show "park".

2.2.2 Moving a fixture to a different handle

You can move a dimmer or fixture from one handle to another simply by entering the DMX channel to match the address of the fixture, then patching it again onto another handle. However, *all programming is lost* for that dimmer channel or fixture.

2.3 Delete

2.3.1 Deleting a patched fixture

You can delete a fixture or dimmer from a handle if you patched it accidentally or if you change your rig and want to use the handle for something else.

1>   *Press Patch (if you're not already in Patch mode).*

2>   *Press the blue Delete button (the light will flash).*

3>   *Press the Swop button of the handle you want to delete.*

4>   *Press Enter to confirm.*

- You can delete individual DMX channels from a handle by typing the channel number instead of pressing a Swop button. This is useful for deleting dimmer channels from handles which have multiple channels patched to them. Be careful not to delete individual channels out of fixtures using this function.

2.4 Advanced options

2.4.1 Patch Utilities

The Pearl allows several options to be set for each fixture or dimmer when it is being patched. The Patch Options menu is accessed by pressing F [Patch Utilities] while you are in patch mode. Set the options before you start programming, because memories will play back differently when the options are on.

The options are:

A: Invert - Allows you to invert an attribute of a fixture, so when you set zero the output will be full. You cannot invert some attributes.

1>   *Select the fixtures you want to invert and turn them on so you can see their output state*

2> *Select the attribute you want to invert by pressing the Attribute Select button (some can't be changed)*

3> *Press Softkey E or F to invert the attributes shown (the VDU screen shows the inversion settings)*

4> *Repeat from 2 if you want to invert more attributes, or 1 if you want to change other fixtures.*

5> *Press Exit to leave Invert mode as soon as you've finished, it is easy to accidentally invert fixtures if you leave this mode active*
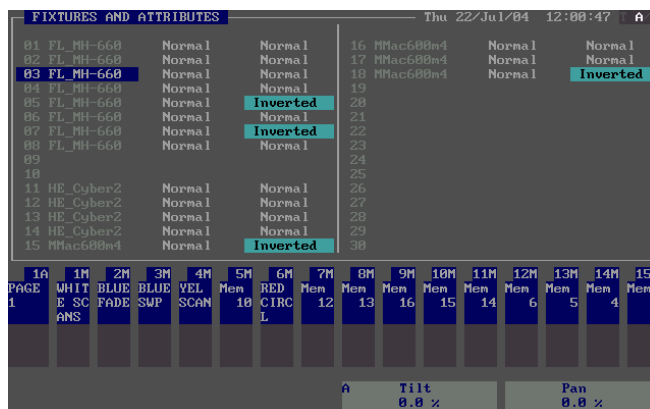
B: Set/Reset Instant mode - When the Pearl fades LTP (movement) channels between two memories, the LTP values normally change smoothly. You can set Instant mode to make the channel snap instantly to the new value.

1> *Select the fixtures you want to change*

2> *Select the attribute you want to change (some can't be changed)*

3> *Press Softkey E or F once to change the attributes shown (the VDU screen shows the settings)*

4> *Repeat from 2 if you want to change more attributes, or 1 if you want to change other fixtures.*

5> *Press Exit to leave Instant mode as soon as you've finished, it is easy to accidentally change fixtures if you leave this mode active*

C: Swap pan and tilt - If you have some fixtures mounted sideways, it can be useful to swap the pan and tilt channels over.

1> *Press softkey C*

2> *Press the Swop buttons of the fixtures you want to change*

3> *Repeat from 2 to change other fixtures.*

D: Set DMX lines - The Pearl has 4 DMX output lines, this option lets you set which connectors they come out of. You can output the same DMX line from more than one connector if you want to.

The console shows the current settings of the DMX outputs on the VDU screen. You need the VDU screen connected to set this option, as the settings are not shown on the on-board display. Use the cursor arrows to select the output you want to change. Press Softkeys A-D to select the DMX line you want to come out of this output.

You can also use this option to set the highest DMX channel to transmit. This will speed up the DMX refresh rate if you are not using all 512 channels. (This option can also be set from the User settings menu).

E: Find fixture - This option lets you find "lost" fixtures (if you have set the DMX address and forgotten what it was, or a fixture has changed its address on its own). You need the VDU screen connected to use this option as the settings are not shown on the on-board display.

1> Using the cursor arrows, select the type of fixture & press enter

2> Spin wheel A until the fixture responds with its "Locate Fixture" state (open white beam, central position). Use the cursor up and down arrows to change one channel at a time.

3> You can change the DMX output line using the A B C D softkeys or directly enter a channel by pressing softkey G

4> Read the DMX address from the VDU screen.

5> Press Exit when you have finished.

F: Set Default DMX lines - This option sets the DMX line mappings back to the factory defaults, as shown in Chapter 1. The LCD display also shows how the DMX lines will be set. Press Softkey A to confirm the setting.

CHAPTER THREE

3. Controlling dimmers and fixtures

This chapter contains: Selecting fixtures and dimmers for control; changing attributes of the selected fixtures; using groups; selecting fixtures one at a time; the align and flip buttons; killing off a fixture; entering levels as numbers; the ML menu and tracking; viewing the output.

When you are programming a show, and sometimes when you are running a show, you need to manually control the fixtures and dimmers to set the intensity, position, colour, etc. To do this you first select the fixtures you want to change using the Swop buttons, then you set the attributes of those fixtures using the Wheels and Attribute buttons.

3.1   Create

3.1.1   Selecting fixtures and dimmers for control

To select the fixtures or dimmer channels that you want to control, you use the handle Swop buttons. You can select fixtures or dimmers individually, or several at once.

You can control dimmer channels and fixture intensity directly from the fader control of the handle, or select the channels as described below and use the Dimmer attribute.

1>   Press the handle Swop buttons for the fixtures you want. The LED in the Swop button comes on for selected fixtures (they are also shown in dark blue on the VDU screen)

2>   To select a range of fixtures, hold down the Swop button for the first fixture then press the Swop button for the last fixture.

Here are some other things to know:

- Press ML Menu then A [Locate Fixture] to position the selected fixtures in open white at a central position (dimmer channels go to 50%). These values are not loaded into the programmer - they won't be saved in a memory unless you modify the fixture.

- If you want to light up a fixture without moving its position, use B [Locate Fixture no Pan & Tilt]".

- You can deselect a fixture by pressing the fixture select button again.

- Once you have changed any attribute, pressing a handle Swop button will deselect all fixtures and start the selection process again.

- You can select fixtures on another page by pressing one of the "Pages of Fixtures" buttons.

- If you have fixtures patched to the top faders you can select them by holding down the AVO button and pressing the Swop button of the fader below.

3.1.2   Changing attributes of the selected fixtures

"Attributes" are the functions of the fixture, like pan, tilt, colour, dimmer, etc. You select which attributes you want to modify using the buttons on the right edge of the console and set values using the wheels at the bottom of the Pearl. The attributes available depend on the fixture type. Dimmer channels only have a dimmer attribute. The Pearl can control up to 40 attributes per fixture.

Attribute select buttons

Each attribute button controls two attributes, one on the left wheel and one on the right wheel.

Control wheels

1>   *Press the button for the attribute to be changed*

2>   *Turn the wheels to set the attribute. The display above the wheels shows which attributes are being controlled.*

3>   *Repeat from 1 to change other attributes of the selected fixtures.*
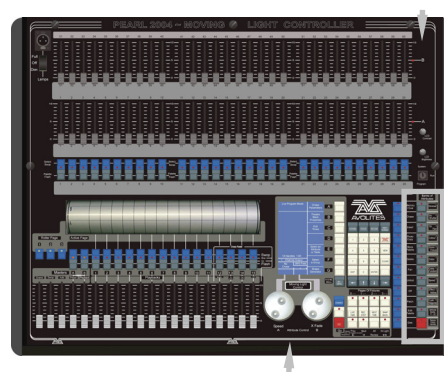
Some other things to know about attributes:

- The Attribute buttons let you select the first 20 attributes. Another 20 attributes are available by pressing the "Attribute Banks 11-20" button, to cater for the weird and wonderful DMX fixtures of the future. The light on the button stays on when you are using the top 20 attributes.

- If the display above the wheels does not show the attribute when you press the button, that attribute is not available on the selected fixtures.

- You can directly control the intensity of the fixture/dimmer using the fader of the handle.

- You can view the available attributes by pressing the View button then B [Fixture Attributes]. The display shows a list of available attributes for the fixture you've selected.

- The wheels operate in an "acceleration" mode. If you spin the wheel fast, the fixture changes in larger steps. If you move the wheel slowly, the fixture moves in its smallest increment. (This replaces the 16-bit mode found on older Pearl software). You can change the acceleration response of the wheels by holding down AVO and pressing 2 (see page 194 for details). You may want a different response for very fine adjustments, or to suit your wheel spinning style.

- Holding down AVO while turning a wheel puts the wheel into "hyper-drive" mode where one complete revolution takes the attribute from 0 to 100%.

- The display above the wheels either shows the output value (percentage and raw DMX value), or it can show Intelligent Attribute Display (for a colour wheel, the display would show "Open", "Red", "Orange" and so on as you turn the wheel). Hold down AVO and press 1 to enable or disable Intelligent Attribute display. The personality fixture must have Range Tables for this to work.

3.1.3 Selecting attributes from the softkeys

You can directly set attributes from the softkeys.

1> Press E [Select an attribute or table] from the main menu

2> Select an attribute type to set. If the attribute is highlighted, a list of possible settings will appear when you press it (for example, a list of possible colours)

3> Select the value you want by pressing a softkey.

4> Repeat from 1 to change other attributes of the selected fixtures.

- The Wheel A and B windows display the table of available values. You can also use the wheels to scroll through the settings.

- If the attribute type is not highlighted, there are no settings available. Pressing the softkey for that attribute will change the selected attribute button but not do anything else.

- Selecting a value from a list will select attribute banks 11-20. You'll need to press the Attribute Banks 11-20 button to get back to the normal attributes.
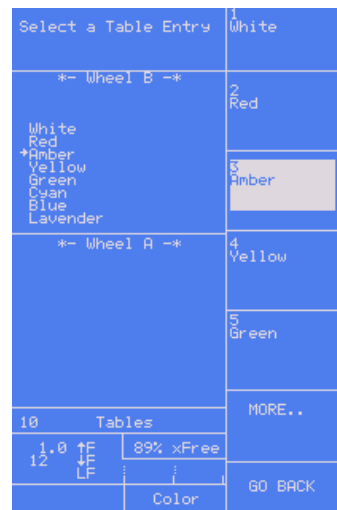
3.1.4 Using groups

You can create groups of fixtures or dimmer channels, to make selecting them faster. You can, for example, make a group for each type of fixture, or group by left / right stage, etc.

1> Select the fixtures/dimmers you want in the group (the order in which you select them will also be stored in the group)

2> Press ML Menu, then E [Record Group]

3> Type the group number you want to store it as, and press Enter

4> Repeat from 1 to store other groups

Other useful things to know about groups:

- To select all the fixtures/dimmers in a group, type the group number on the numeric keypad, then press A [Recall Group]. All other fixtures and dimmers are deselected.

- The order in which you select the fixtures takes effect when you use the last fixture – next fixture functions described in the next section, and when you use Shapes and Fan mode.

3.1.5 Stepping through selected fixtures one at a time

If you have selected a range of fixtures, or a group, the Pearl has functions to step through the selected fixtures one at a time. This can make it easier to program a range of fixtures because you don't have to select each one manually.

This mode uses the "Sequence Control" buttons which are normally used for controlling chases.

1>   Put the Pearl into Fixture Select mode by holding down the AVO button and pressing Softkey B until the option shows [Fixture Control Enabled]

2>   Select a range of fixtures or a group

3>   The ← (Reverse) and → (Forward) buttons will select the fixtures in the range one at a time

4>   The ←→ (Bounce) button will highlight the output of the selected fixture so you can see it on stage (the button LED is lit when in Highlight mode)

Sequence control buttons

5>   The Review button reselects the whole range of fixtures.
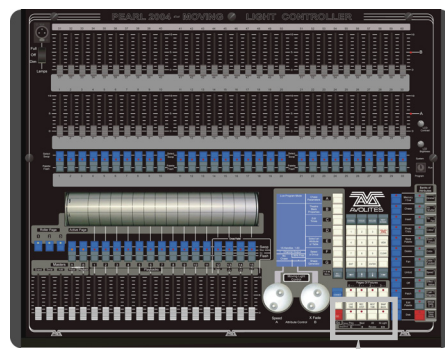
- The Sequence Control buttons stay in this mode until you change them back by holding AVO and pressing Softkey B again. This means you cannot use them for controlling chase direction.

- You can also use the left and right arrow keys to step through selected fixtures.

- The selected fixture from the range will light up, and the other fixtures will go out (if the "Highlight Enabled" option in the ML menu is turned on).

3.1.6   The Align and Flip functions

The **Align** function allows you to copy an attribute from one fixture to others. This can be useful if you want to set a row of scans to have the same tilt position, or if you want to copy a colour from one fixture onto other fixtures.

1>   Press an attribute button to select the attribute you want to align.

2>   Select the fixture to use as the reference

3>   Select the other fixtures you want to align to the first one

4>   Press ML Menu, then D [Align <attribute name>].

5>   The attributes will be copied to all the selected fixtures.

- You can align all attributes of the fixtures using Softkey C [Align Fixtures] (it doesn't matter which attribute is selected).

- If you use a group to select the fixtures, the one you selected first when you recorded the group will be the reference fixture.

- If Tracking mode is on (see page 131), aligning the Pan/Tilt attribute will cause all the fixtures to point at the same place on the stage rather than copying the actual Pan/Tilt values.

The **Flip** function is used with moving head fixtures. This type of fixture has two possible pan and tilt positions for each point on stage, and the Flip button alternates between them. This allows you more freedom to make movements without hitting the pan stop.

1>   Select the fixtures to flip.

2>   Press ML Menu twice (option A should be Flip)

3>   Press A [Flip].

- The other functions on the ML menu are described at the end of the chapter.

3.1.7 "Killing off" a fixture or dimmer

Sometimes during a show you might want to "kill" a fixture or dimmer from the stage output. This may happen if a camera is having problems with a light shining straight into it, if a lamp blows and you want to keep the rig symmetrical or if a fixture loses position.

The "Reduce fixture intensity" button allows you to temporarily dim or turn off any fixture or dimmer. Programming is not affected and you can later restore it to normal operation. You can do this in program mode or run mode. You have to hold down the AVO button to access the function to stop it being accidentally pressed.

1> Hold down the AVO button and press "Reduce Fixture Intensity" (in the lower right corner).

2> Put the fader for the fixture/dimmer channel to be reduced up to full (if it was already full, take it to zero then up to full).

3> Reduce the fader to the intensity level you want.

4> Repeat from 2 to reduce other fixtures.

5> Press Reduce Fixture Intensity to finish.

- To restore the fixture, do the above but leave the fader at full. The fixture will stay "reduced" until you restore it.

- Make sure you turn off Reduce Fixture Intensity when you have finished, otherwise you will end up reducing intensities when you don't want to, and wondering why none of your fixtures are coming on.

- To cancel all reductions, put all faders to zero, then press the Reduce Fixture Intensity button and put all faders to full, then press the button again to end.

- If the Swop buttons are in "mimic" mode (see page 182), they will show the programmed output of the channel, not the reduced output.

3.1.8 Entering intensity levels as numbers

You can set levels using the numeric keypad as you would on a theatrical lighting desk. If you are used to doing this, it can be faster when plotting dimmer levels for a scene than using the select buttons and the wheels.

1> Press the Channel button

2> Type the dimmer or fixture handle number (not the DMX channel) on the keypad.

3> Press G [At %].

4> Press 0 - 9 for the intensity (0=0%, 1=10%, 2=20%, 3.5=35%), or Softkey G again for 100%

5> Press the decimal point key and another digit for more accurate control

6> Press Channel again to get back to normal (the Exit button does not operate in this mode)

Other things you can do by numeric entry:

- The softkey options are B: Blackout, D or G: set to 100%, E:up by 5%, F:down by 5%.

- You can select multiple dimmer handles (which you can then control using the wheels) using softkey F [Through]. Enter the first dimmer number, press [Through], then the last dimmer. For example 1 Through 10 would select dimmers 1 to 10.

- You can also set multiple dimmers to the same level using softkey F [Through]. Enter first dimmer number, [through], last dimmer, [At %], level. For example, 1 [Through] 1 0 [At%] 5 would set dimmers 1 to 10 to 50%.

- Softkey B [Select new fixture type] lets you tell the desk the type of fixture you are working with. It uses this when you select fixtures. Normally it is set to "desk channel" and will select fixtures starting from handle 1. If you set it to dimmer, it will only select dimmers, starting at the first dimmer patched, so selecting 1 "through" 10 would select the first 10 dimmers, wherever they are patched. You can set the option to any fixture type you have patched on the console.

- If you have more than one dimmer/fixture selected, Softkey C [Odd or Even], allows you to select the odd and even numbered channels. Softkey B selects Even channels and C selects Odd channels. Softkey A selects all channels again after you have used this option.

- Softkey E [Select Group] allows you to recall a group by entering the group number.

3.1.9 Controlling fixtures by entering values

You can also directly enter values for fixture attributes. This can be useful for programming palette values from a fixture data sheet.

1> Select the fixtures to be set by pressing the Swop buttons

2> Select the attribute to be set using the Attribute buttons

3> Type the value to set.

4> Press Softkey E or F to set the A/B wheel attribute (displayed next to the softkey).

5> Press G [Set input to 0-255 / %] to change the entry mode between 0-100 and 0-255.

- You can change the attributes to be set by pressing another Attribute button, but then you will need to enter the value again.

- You can also recall groups of fixtures or dimmers (type group number, then press A [Recall Group]).

- You can recall palette entries (type palette entry number, then press B [Recall Focus])

3.1.10 Fan mode

Fan mode automatically spreads out the values on a selected range of fixtures. If used on pan and tilt, the result is spreading out "rays" of light beams. The first and last fixtures of the range are affected most, and the central fixtures are affected least. The amount of fan can be set using the wheels.

As with shapes, the order in which you select the fixtures sets how the fan effect works. The fixtures you select first and last will be the ones which change most. If you use a group to select the fixtures, the order is that in which the fixtures in the group were selected when it was created.

The fan effect, while normally used on pan or tilt attributes, can be applied to any attribute.

1> Select the fixtures you want to fan

2> Select the attribute to fan (pan/tilt, colour etc)

3> Press Fan

4> Set the amount of fan using the wheels

5> The display shows which attribute is being controlled by each wheel

6> Turn off Fan by pressing the Fan button again when you have finished

Fan mode needs to be used on at least 4 fixtures to give good effects. If you have an odd number of fixtures, the central fixture will not move in fan mode.

Press the Fan button again to leave Fan mode. Any effects you have set will remain in the programmer.

- It's fairly easy to accidentally leave Fan mode turned on and be very confused about why the wheels aren't working properly, so turn it off as soon as you have completed the effect.

3.2   Advanced options

3.2.1   The ML menu and Tracking

The "ML menu" (Moving Light menu) button allows access to some handy features for moving lights.

If you press the ML Menu button again you will get a second set of options

Option A "Locate Fixture" positions selected fixtures at central position, with light coming out of them. The settings are not placed in the programmer, so you need to change the values if you want to save them. The "locate fixture" settings for each type of fixture are defined in the personality file.

Option B "Locate Fixture no pan/tilt" turns on the selected fixtures but does not move them to a central position. This is useful if you don't want to disturb the positioning of fixtures but need to light them up.

Option C and D "Align Fixtures" and "Align <attributes>" are described in section 3.1.6 on page 128.

Option E "Record group" is used to group fixtures for easy selection as described in section 3.1.4 on page 127.

Option F allows you to turn the Pearl's 3D stage tracking mode off or on. You can also do this from the graphics tablet (see page 176). When tracking mode is on, the pan and tilt controls set the position on the

stage rather than absolute DMX values. You need to Define the Stage (see next page) before you can use Tracking.

Option G is used to run "macros" which are used to strike lamps or reset fixtures, etc. These features often require a sequence of levels to be sent on different control channels, which the Pearl can do automatically if the macro is defined in the personality file for the fixture.

The display will show a list of available macros for the fixtures which are currently selected. If no macros are available for those fixtures, the option will not do anything. The Personality File section on page 206 contains details.

On the second page of the ML menu... (press ML Menu again)

Option A "Flip" is described in section 3.1.6 on page 128.

Option B "Calculator" displays a screen on the VDU screen allowing you to convert numbers from decimal to hex or to binary. This is useful for working out dip switch settings. You need the VDU connected to use this function.

Option C "Remove selected fix. from programmer" allows you to remove from the programmer fixtures which are selected. This can be useful if you have changed a fixture you didn't want to include in a memory – just select the fixture, then use this option.

Option D "De-Select fixtures" deselects all fixtures but does not clear the programmer.

Option E "Highlight enabled" causes the selected fixture to light up when stepping through selected fixtures using the sequence buttons or arrow buttons; other fixtures in the selection go off. If this option is disabled, the fixtures do not change when they are selected or deselected.

Option G "Define the stage" lets you teach the Pearl how your lights are set up so that you can use its 3D tracking mode. This is described in the next section.

3.2.2   Training the console for Tracking mode

The Pearl can learn the layout of the stage and lights rig you are using. This enables it to calculate where it needs to point each light so that they all hit the same place on the stage. This is called Tracking mode and it is a very powerful feature of the Pearl.

You need to mark a square on the stage, ideally the sides of the square need to be half the depth of the stage but as long as it's square and you can point all the fixtures at the corners, the size is not that important.

1>   Select all the fixtures you want to use for Tracking.

2>   Point all the fixtures so they light someone standing at the back left hand corner of the square (don't light a circle on the floor, or your lights will be pointing at peoples' feet all the time).

3>   Select option A "Top left". This stores the positions.

4>   Point them all so they light someone standing at the back right hand corner, then select option B "Top right".

5>   Repeat for the front corners of the stage using options C and D to store the positions.

6>   *Press Enter to complete the process.*

7>   *The Pearl will go away and do lots of calculations. The top line of the LCD shows the progress. This can take several minutes.*

8>   *Press ML menu then Softkey F to enable Tracking mode (option shows [Tracking On (Off)] when tracking is enabled)*

- You can recall a position you have already set, if you want to edit it, using F [Recall] then A B C or D to recall one of the positions.

- You need to make sure you are lighting a person rather than making a spot on the stage, because otherwise the beams will cross over at the wrong place. If you can't find a handy spare person, use a plastic cup or a light coloured item of clothing over the end of a mic stand at head height.

- If you are using moving head fixtures, you need to ensure when hanging them that the pan stop is on the side away from the stage, or the fixtures will not be able to track over the whole stage area. You also need to keep the Tilt value less than 50%, or the heads may "flip" when you track into some areas.

- Fixtures which have not been trained for Tracking will operate as normal when tracking mode is enabled.

- When Tracking mode is turned on, the VDU screen shows "T" in the top right hand corner.

CHAPTER FOUR

4. Palettes

This chapter contains: About palettes; shared and individual palettes; recalling a palette; storing a palette; palette masks.

When programming a show you will find that you frequently use certain positions, colours, etc. Like an artist's palette, the Pearl lets you store these settings so you can recall them at the touch of a button rather than having to find them on the wheels every time. There are 10 pages of 20 palette entries. You can name the palette values so that you know what you're getting, and select them using the LCD display softkeys.

Also, when you patch a fixture, the Pearl loads 10 preset positions, 10 colours and 10 gobos into the palette for that fixture. This allows you to recall specific colours and gobos without having to find them using the wheels. The positions normally need to be edited before you can use them.

4.1 Create

4.1.1 Palette values stored as a reference

The most important thing about palettes is that when you use a palette value in a memory, the Pearl stores a reference to the palette, rather than the actual value. This means that if you program your memories using palettes, you can easily change all the positions just by reprogramming a few palette entries rather than having to reprogram all the memories. This is handy if you are touring a show and have to cope with different stages or truss heights every show.

4.1.2 Shared and individual palettes

Palette entries can be shared or individual.

- Shared: If there is only one fixture in the programmer (you have only changed one fixture) when recording the palette entry, then you can use that palette entry for all fixtures of the same type. So you could save a value for "Red" on the first of your Wackylites™, and then use that value for any of your other Wackylites. This is a shared palette, useful for values which are the same for all the fixtures of one type, such as colour, gobo, prism etc. The pre-programmed palettes are all shared.

- Individual: If there is more than one fixture in the programmer when recording the palette entry, then the entry is unique for each fixture. So when you save an entry with pan/tilt positions for your 4 central Wackylites, those positions will only ever apply to those fixtures. You can later add values for other fixtures; fixtures which have no values saved will not change when the palette is recalled. This is an individual palette, useful for values which vary for each fixture, like pan, tilt and image focus.

4.1.3 Which attributes are stored in palettes

A palette entry can store any or all attributes of a fixture, so you could store position, colour and gobo in the same palette entry. However, it's easier to operate the Pearl if you have some palettes for position, some

for colour, some for gobo and so on. There are 200 palettes available so you don't need to mix them up.

4.1.4   Storing a palette

This is how you save a palette value:

1>   *Press Clear to clear the programmer.*

2>   *Select the fixtures for which you want to store palette values. Select one fixture only to record a shared palette entry.*

3>   *Using the attribute buttons and wheels, set the attributes you want in the palette entry. You can store any or all attributes of a fixture in each palette entry. Only attributes you have changed will be recorded.*

4>   *Press the attribute button for the attributes you want to store (the dimmer button will store all attributes). The buttons light up to show you which attributes are going to be recorded. It's best to save only one type of attribute (e.g. Tilt/Pan)*

5>   *Press Store Palette, then type the palette number to be saved and press Enter. You can also press one of the Flash buttons under the 1-30 preset faders to store the palette entry under that button*

- It's easiest to recall palettes from the LCD menu. If you are saving palettes to be recalled from the menu system, the palette numbering is as follows:

Page name	1st Screen	2nd screen	3rd screen	4th Screen
Colour	1-5	6-10	101-105	106-110
Gobos	11-15	16-20	111-115	116-120
Positions	21-25	26-30	121-125	126-130
Page 4	31-35	36-40	131-135	136-140
Page 5	41-45	46-50	141-145	146-150
Page 6	51-55	56-60	151-155	156-160
Page 7	61-65	66-70	161-165	166-170
Page 8	71-75	76-80	171-175	176-180
Page 9	81-85	86-90	181-185	186-190
Page 10	91-95	96-100	191-195	196-200

- If you normally use the grey Flash buttons to recall palettes, then you would use numbers 1-30. You can also change the fixture page to access Palettes 31-60 (on page 1--), 61-90 (on page 2--) and 91-120 (on page 3--). You need to enable User settings 5 (Palette Pages) to make the extra pages work, otherwise Palettes 1-30 are used on all four fixture pages.

4.2   Playback

4.2.1   Recalling a palette value

To recall a palette value, this is what you do:

1>   *Select the fixtures to be changed. Shared palettes can be set to*

any fixture of the same type. Individual palettes will set individual values to each fixture.

2> Select the attributes you want to recall from the palette. The Dimmer attribute button will recall everything stored in the palette (the LEDs on the buttons show you which attributes are active)

3> Press the Focus button, then the palette page you want if the pages are displayed, then press the softkey for the palette entry you want (or Softkeys F and G go up and down the list). The selected attributes of the fixtures will be set to the palette values. The console will stay in "Apply palette" mode until you press Exit.
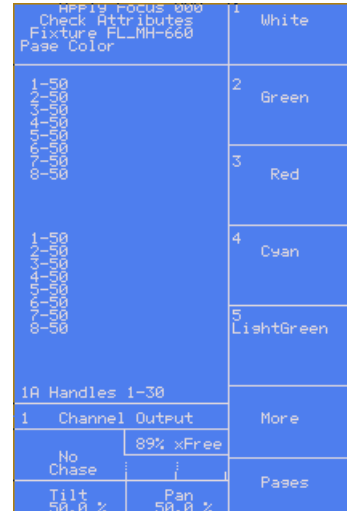
- It's easiest if you only save one type of attribute (such as pan/tilt) into each palette, then you can just leave the Dimmer attribute button selected when recalling the palette. If you store a mixture of attributes, you always have to make sure that the correct attributes are selected when recalling a palette, and this is an extra step which you could do without.

- You can also use the grey Palette/Flash buttons below the preset faders to apply palettes 1-30. While you hold the button, the top line of the display shows the legend for the attribute (White, Green etc). When you release the button, the palette is applied. If you decide you don't want to apply the palette, press the Focus button before you release the grey Flash button.

- You can recall a palette by number, type the palette number on the keypad and press B [Recall palette].

4.2.2 Palette pages

If Palette Pages are turned Off (User Settings 5), palettes 1-30 are available from the Palette/Flash buttons on every Fixture page. If the option is On, then Fixture Page 0-- has palettes 1-30, Page 1-- has 31-60, Page 2-- has 61-90 and Page 3-- has 91-120.

4.2.3 Setting a palette to all fixtures (Quick palette)

You can apply a palette to all patched fixtures. Ensure no fixtures are selected, press Focus, then the palette page you want. Press the softkey for the palette you want to apply. The palette will be applied to all fixtures.

Alternatively, hold down one of the grey Palette/Flash buttons. The palette legend will be displayed in the top line of the screen. When you release the button, the palette will be applied to all fixtures. If you decide you don't want to apply the palette, press Focus before you release the palette button.

User Setting 6 (Hold AVO and press softkey C) must be enabled for Quick Palettes to work.

4.2.4 Recalling only some attributes from a palette

You can recall only selected attributes out of a palette entry using the

Focus button. Press Focus, then select the attributes you want to recall on the Attribute buttons, then enter the palette number.

You can change the way the attributes are grouped when saving or recalling palette entries by selecting the attribute button to change, then holding AVO and pressing softkey C to enter the User Settings mode, then pressing C [Specify Attributes for Bank]. The buttons will light to show which attributes are saved when that button is selected. You can press the buttons to include or exclude attributes. Press Exit twice to finish. If you do change these settings for any reason you should change them back when you have finished to avoid confusion.

4.2.5 Setting a palette to fixtures in a memory (Filtered palette)

You can apply a palette to all fixtures in a memory, without having to select the fixtures. Press Focus, then the palette page you want; then hold down the softkey for the palette you want to apply, and press the Swop button for the memory. When you release the palette key, the palette will be applied to all fixtures in the memory.

4.3 Edit

4.3.1 Editing and deleting palettes

- You can edit a palette entry by recalling it, making the changes you want, then saving the new information back on top of the existing palette entry. Anything you haven't changed will not be affected, values you have changed or added will be amended. You can also use the Edit Palette button, which automatically selects the fixtures used in the palette and performs a "Locate fixture" on them.

- You can remove attributes from palettes using the Off function, see page 153.

- You can delete a palette entry by pressing Delete, then Focus, then type the palette number to be deleted and press Enter. (You can also press Delete then the grey flash button for the palette entry to be removed)

4.3.2 Naming a palette value or page

You can enter a legend for each palette value and for each palette page. If you're recalling the palettes using the LCD menu this is useful so you know what you're getting.

Palette legends can be different for each fixture type; the Pearl will change the fixture type as you select different fixtures so that the legends will match the fixture.

Alternatively, if you are happy for palette legends to be the same for all fixtures, you can set the fixture type to "All". The Pearl will then leave the type set to "All" no matter what fixtures you select. Legends saved with the fixture type set to "All" will be shown whenever the "All" fixture type is selected.

You change the fixture type for which you are setting the legends using

softkey G [Set fixture type].

1>	*Hold down the AVO button and press G [Set Legend].*
2>	*Check the Fixture Type is correct (shown on the top line of the display). Press G [Set Fixture Type] and select a fixture type to set legends for a different fixture.*
3>	*Press B [Palette Page] to set a legend for a palette page, or C [Palette] to set a legend for a palette entry.*
4>	*Find the entry you want to name using F [More] and G [Back] to move through the pages*
5>	*Press the softkey for the entry you want to change.*
6>	*Type the legend using the external Qwerty keyboard and press Enter to save.*

You would typically use "All" if your palette legends are the same for all fixtures and you don't want to type individual palette legends in for all your fixtures; this allows you to set the legend only once.

4.3.3   Viewing the contents of a palette

Press View, then Focus, then enter a Palette number. (Or press View then a grey Palette/Flash button).

The palette contents will be displayed on the VDU screen. You can change the attributes displayed by pressing the Attribute buttons.

For an Individual palette (a position palette is shown in the picture) there will be a value for

each fixture. For a Shared palette there will be one value for each type of fixture.

4.4   Timing

4.4.1   Recalling a palette with a fade time

You can recall a palette with a fade time by typing a time (in seconds) after you press Focus, before you recall the palette.

Recalling Palettes with a fade time is very effective when you are running a show. However, if you use a fade time the palette does not get put in the programmer, so you should not use fades when you are programming.

A maximum of five timed palettes can be fading at any one time.

4.4.2   Master fade time

You can set a master fade time so that all palettes will fade over that time.

1>   Press Focus.

2>   Press G [Options]. (If G shows [Pages] then press it to return to the main Palette menu, then G will show [Options]).

3>   Press A [Set Master Time]

4>   Type the time in seconds and press Enter to save.

If you set a master fade time, no palettes will get put in the programmer. If you are using palettes in your programming, ensure the master fade time is set to zero.

If you have a master fade time set, and you also enter a fade time manually, the manual time will override the master time.

If you don't want palettes to get put in the programmer, which can be useful when you are running a show, you can set this time to 0.1 seconds which will still apply the palette instantly but will then allow it to be overridden by new memories being turned on.

4.5   Advanced options

4.5.1   Palette options

Press Focus then Softkey G [Options] to show the options menu. If a palette page is displayed rather than the main palette menu and softkey G is [Pages], press softkey G to get to the main palette menu.

A: Master time - Lets you set the time over which all palettes will be faded, so you don't have to keep entering a time. See page 140.

B: Fixture Type - Sets the fixture type for which the palette legends are displayed (as the palette entries may be different for different fixture types).

Normally the Pearl will change this automatically to match the fixtures you have selected, so you won't need to change it. If you select fixture type "All", then generic palette legends will be shown (legends saved for the "All" fixture type), and the Pearl will not change the fixture type.

To return the fixture type selection to automatic, select a fixture type other than "All".

CHAPTER FIVE

5. Shapes

This chapter contains: Selecting a shape; changing the size and speed of a shape; spreading a shape across multiple fixtures; editing shapes which are running.

The Pearl, in common with other Avolites consoles, has a shape generator. This allows you to quickly create exciting light shows using lots of movement and changes, with the minimum of programming.

A shape is simply a sequence of values which can be applied to any attribute of a fixture. A "circle" shape, for example, applied to the pan and tilt attributes, would cause the fixture to move its beam around in a circular pattern. You can set the centre point of the circle, the size of the circle and the speed of the circle movement.

In addition to beam position shapes, there are a large number of other shapes available in the Pearl. The shapes are defined for a particular attribute such as colour, dimmer, focus and so on. Some shapes will not work with some fixtures; focus shapes, for example, can produce nice "focus pull" effects on fixtures which have DMX focusing, but will do nothing on fixtures which don't have focusing.

When you use a shape with more than one fixture, you can choose to either apply the shape identically to all the fixtures, or offset them so that the shape runs along the fixtures creating "wave" or "ballyhoo" type effects. This is called the *spread* of the shape.

5.1   Playback

5.1.1   Selecting a shape

Selecting a shape is very similar to selecting a value from a palette. When you choose a shape, it will be applied to all selected fixtures.

1> *Select the fixtures the shape is to be applied to.*

2> *Press G [Shape Generator].*

3> *Press A [Playback a shape].*

4> *Press one of the A-E softkeys to apply a shape to the fixtures (or the F and G softkeys go up and down the list). The screen describes the shape for each button.*

- Most shapes are based on the current settings of the fixture, so a circle would move around the current pan-tilt position of the fixture.

- If the shape description says "Even" or "Parallel", this describes the Spread of the shape. You can always change this later.

- You can change the base value of a shape (e.g. the centre of a circle) by changing the attributes using the wheels in the usual way. You can reduce the Size to zero (see next section) to help

you see what the base value actually is.

- You can run more than one shape at a time by repeating the above procedure. You can run several shapes on one fixture.

- Press G [Shape Generator], then B [Edit a shape] to show what shapes are running.

- If you apply the same shape to two different groups of fixtures, the shape will appear twice on the shape list. You can edit the two shapes separately to give different directions, speeds etc (see later)

- You can remove shapes from fixtures which are selected by pressing G [Shape Generator], then E [Remove shapes from selected fixtures].

- Each shape is designed to work on a particular attribute; the list on the palette display shows you which attribute. Obviously if the fixtures don't have the attribute, you can't use that shape on those fixtures.

5.1.2 Changing the size and speed of a shape

It is easy to change the size and speed of a shape after it has first been selected.

1>   Press G [Shape Generator] (if you are not already in the shape generator menu).

2>   Press D [Set wheels to Size/Speed]

3>   The left hand wheel controls the Size. The right hand wheel controls the Speed. The display shows the values.

Other things to know about size and speed of shapes:

- If you have more than one shape running, the controls operate on the most recent one. You can edit the parameters of any shape that's running using the Edit Shape function, see later in the chapter.

- The minimum size is zero. This will "hide" the shape, and the fixture will resume its previous settings. The shape is, however, still active.

- The minimum speed is Stop. This will freeze the shape and will offset the positioning of the fixture.

5.1.3 Spreading a shape across multiple fixtures

To get the maximum impact from a shape, apply it to several fixtures. The Pearl has some powerful "Spread" functions which determine how the shape is spread out across the fixtures.

This can vary from all fixtures moving identically (Coarse spread = NONE), fixtures working in pairs (Coarse spread = 1) through to all fixtures being distributed evenly through the shape, so the first fixture is just starting the shape as the last one finishes (Coarse spread = Even).

The "Fine" spread value introduces a smaller offset into the timing of the shape across each fixture.

1>   In Shape Generator menu, press C [Set wheels to Spread].

> 2> *The left hand wheel controls the Fine Spread. The right hand wheel controls the Coarse spread.*
>
> 3> *Keep the Fine Spread at zero while you adjust the Coarse spread to the desired value, or the output can get confusing.*

- The order in which you selected the fixtures before assigning the shape determines how the shapes are applied; the "first" fixture is the one you select first and the "last" fixture is the one you select last.

- If you select the fixtures using a group, the order in which you selected the fixtures when recording the group is used.

5.1.4 Relative and Absolute shapes

Some shapes will operate on the current settings of the fixture; a Circle shape, for example, will be centred around the current pan and tilt positions of the fixture. This is called a **relative** shape. If you change the pan and tilt of the fixture, the whole shape will be moved.

- All Position (pan/tilt) shapes, and other shapes with "User" or "Usr" in the name, are Relative shapes.

Other shapes always operate about a fixed value; a Rainbow shape, for example, is centred at the midpoint of the colour mix attributes so that a full range of colours is obtained. This is called an **absolute** shape. The current settings of the fixture are overridden by the shape.

- Non-position shapes (colour, gobo, focus, dimmer, iris) are usually Absolute shapes, unless they have "User" or "Usr" in the name. For example, "Magenta Even" is an absolute shape centred on 50% magenta, but "Magenta Even Usr" is a relative shape which will change around the current Magenta value of the fixture.

If you run a memory containing a shape, when you turn the memory off the shape will stop. The final state of the shape will be left as an offset to the fixture settings. Option E of the Playback Parameters (see next page) allows you to remove this offset when the shape stops and return the fixture to its programmed settings.

5.2 Edit

5.2.1 Editing shapes which are running

The Shape Generator menu allows you to edit shapes which are running using option B [Edit a shape]. This option lets you select which shape is the "Active shape" (the one you can control the speed, size and spread of with the wheels). You can't edit shapes which are being played back from a memory using this option, only shapes in the programmer.

> 1> *If you are not in the Shape Generator menu press Softkey G from the main menu*
>
> 2> *Press B [Edit a shape]*
>
> 3> *Next to the softkeys is a list of shapes you can edit.*
>
> 4> *Press a softkey to make the shape active. Active shapes are highlighted. You can make more than one shape active.*
>
> 5> *Press Enter when you have finished*

6> The speed, size and spread controls will now affect all the shapes you have set to be active.

Any changes you make to a shape will affect all fixtures which are running that shape. If you applied the same shape several times to different fixtures, you can change each copy of the shape independently.

5.3   Advanced options

5.3.1   Shape options

The softkey options are:

A [Playback a shape]- Selects shapes, as previously described

B [Edit a shape] - Allows you to change speed, size and spread of running shapes as described above

C [Set wheels to spread] - Sets the wheels to change the Spread of the shape

D [Set wheels to size/speed] - Sets the wheels to change the size and speed of the shape.

E [Remove shapes for selected fixtures] - This option is the only way to turn off shapes for an individual fixture. Select the fixtures you want to remove shapes from, then select this option. All shapes will be removed from the selected fixtures.

F [Change direction] - The direction of the Active shape(s) will be reversed.

G [Playback parameters] - This option lets you set parameters for a shape stored in a playback / memory. When a memory fades in, you can determine whether the shape should start at full size and speed instantly, (Static) or whether the shape speed and/or size should fade in as well (Timed). If the memory mode is set to 0, the size and speed settings are ignored.

1> Press the swop button of the playback you want to set the parameters for

2> The Pearl displays the current settings in the main LCD window.

3> A [Toggle Size] sets the Size to Static or Timed

4> B [Toggle Speed] sets the Speed to Static or Timed

5> C [Toggle Merge] sets the Shape Merge option on or off (if you run two playbacks applying shapes to the same fixtures, this option allows you to merge the shapes or override previous shapes with the

latest one)

6> *D [Set memory to mode x] sets the current memory mode of the playback. To activate options A & B, the memory mode needs to be Mode 1 or 2. This is described in the next chapter.*

7> *E [Toggle shape offset] allows you to remove the offset caused by a shape when it is stopped. When you turn off a memory with a shape, the fixtures will be offset by the last state of the shape. Setting this option to "Removed" causes the fixture to return to its programmed settings. Setting this option to "Remains" leaves the shape offset in place.*

The following table explains how the Size/Speed Static and Timed options work, and how the memory mode affects these options.

Memory mode	Size option (softkey A)	Speed option (softkey B)
0	**Static**: Shape starts at recorded size when fader goes above trigger point **Timed:** as static	**Static:** Shape starts at recorded speed when fader goes above trigger point **Timed:** as static
1	**Static**: As mode 0 **Timed**: Shape size grows from zero to recorded size as LTP channels fade in (set by LTP fade time)	**Static:** As mode 0 **Timed:** Shape speed rises from zero to recorded speed as LTP channels fade in (set by LTP fade time)
2	**Static**: As mode 0 **Timed:** Shape size grows from zero to recorded size as fader position moves from 0 to 100%	**Static:** As mode 0 **Timed:** Shape speed rises from zero to recorded speed as fader position moves from 0 to 100%

5.3.2 Updating the shape file

If Avolites release an updated shape file, you will need to load it into the Pearl. The shape file SG.DAT can be found on any personality disk, which you can download from the Avolites website (see page 206). Insert the floppy disk into the drive, turn the key to System, press G [Utilities] then E [Load shape file].

CHAPTER SIX

6. Memories

This chapter contains: HTP and LTP channels; how the Pearl works when programming; recording a memory; playing back a memory; changing playback pages; setting fade times for a memory; copying and deleting memories; the include function; editing memories; the "off" button; blind mode; recording the stage using snapshots; using shapes in memories.

The Pearl has many functions for producing a complex light show, and the most fundamental part is a Memory, in which you can store a "look" you have created using your lights.

The Pearl has 450 playbacks, in 30 pages of 15, which can be used to store memories or chases (sequences of "looks"). Chases are covered in the next chapter. The playbacks are controlled using the sliders and flash buttons across the near edge of the console. The roller is used to select the page of memories or chases.

Playback faders & roller

The memory functions on the Pearl are very powerful; the first part of this section explains the basics of how the Pearl uses memories.
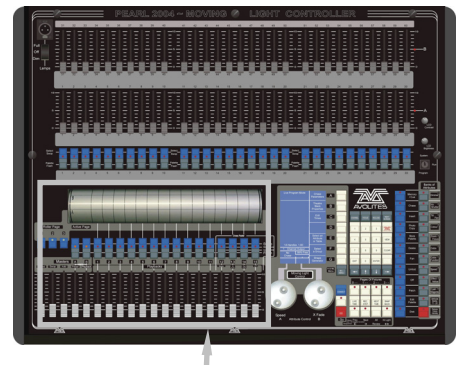
6.1 Create

6.1.1 How the Pearl works when programming

The Pearl has a special internal memory called the "Programmer". Whenever you change an attribute of a fixture, the changes are stored in the Programmer. When you record a memory, the contents of the programmer are stored in the memory. Nothing else from the console output is stored.

The Pearl has two programming modes, "Record by Fixture" (the normal mode) and "Record by Channel". The mode can be changed using Softkey B when saving a memory, or from User Setting 1 (hold the AVO button and press C [User Settings]). The differences are:

- **Record by Fixture** - When you change any attribute of a fixture, all the other attributes are placed in the Programmer as well. You will get exactly the result you expected when you recall the memory, but you can't combine memories containing the same fixtures, because the new memory will just override the old one.

- **Record by Channel** - Only the attribute you change is placed in the programmer. This means you can save memories which only contain position information, then recall them with other memories to set colours, gobos etc. This is much more flexible but requires more programming initially, because you need several memories to get a result. It also lays you open to problems if you don't keep tabs on what you are doing. (This is known as *Tracking* mode on

other consoles).

When you press **Clear**, all fixtures are cleared from the programmer. You should get into the habit of pressing Clear before you start to program a memory, or you can end up recording fixtures you don't want. You also need to press Clear when you finish programming, because any functions in the programmer will override playbacks.

Attributes which are in the programmer are shown with a "m" (modified by Preset), "w" (modified by Wheel) or "P" (modified by Palette) on the on-board output display. On the VDU screen, attributes in the programmer are displayed with a light blue (cyan) background.

Turning on a memory does *not* place the values from the memory in the programmer (but the Include function lets you do this, see page 152). The Locate Fixture function does not place any values in the programmer either.
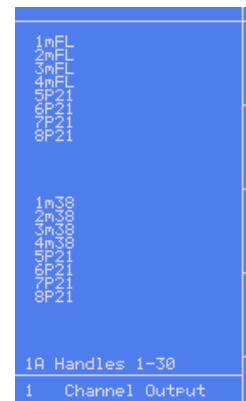
6.1.2   Creating a memory

The Pearl has 30 pages of 15 memories. The roller allows you to select 10 pages, and the buttons to the left of the roller allow 3 different rollers.

1>   *Press Clear to clear the programmer. This ensures that you are starting with a clean slate.*

2>   *Set up the stage effect using the fixtures. You can include shapes in a memory. Remember that only the fixtures you have changed will be included in the memory.*

3>   *Press Memory.*

4>   *Empty memories will flash.*

5>   *Press the Swop button of a flashing playback to record it. (Select a new page first if you want to use a different page).*

6>   *Press Clear to clear the programmer. Repeat from 2 to program more memories*
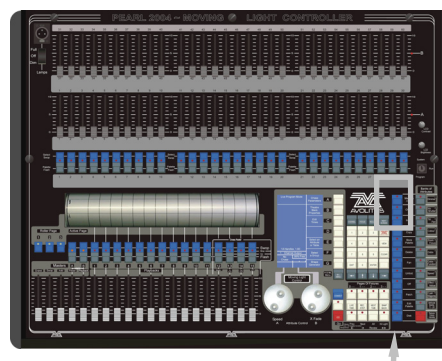
Memory button

Other useful things to know about recording memories:

- You can record the whole output of the console (not just what's in the programmer) by pressing A [Record Stage]. The option will highlight when Record stage mode is active.

- The roller has a segment above each playback fader to allow you to write on the name of the memory using the low-tech but reliable method of marker pen (use a strip of tape on the roller surface). You can then see at a glance what's in each memory.

- You can also type in a legend for the memory, which is shown on the VDU screen. Hold AVO and press G [Set Legend], then the playback Swop button, then enter a name using an external Qwerty keyboard. The text is shown on the VDU screen. Press

Enter to store it, then Exit to finish.

- You can also label the current playback page this way, by pressing A [Current Page] instead of the playback Swop.

- If you forgot to bring your Qwerty keyboard, you can use the Swop buttons of Presets 1-26 for capital A-Z, and the Flash buttons for lower case a-z (these keys are shown on the VDU screen).

- If you aren't using a VDU screen, there is no point entering memory legends as you can't see them on the on-board display (You can however see Page legends and Palette legends). If you accidentally enter Set Legend mode you need to press Exit twice to get the console back to normal mode.

6.1.3 Recording the stage using Snapshots

The Snapshot function allows you to instantly record the current output of the console for later use. This can be useful if you suddenly create an amazing effect on stage, but it's a mixture of things you have changed and things left over from the last memory.

When you take a Snapshot, any fixture which is lit up (has its dimmer channel on), and any active dimmer channels are stored. You can later retrieve the snapshots and copy them into memories.

The Pearl can store up to 50 snapshots. They are listed by time and date, so if you write down the time when you store one, you will be able to identify them later.

1> Hold down the AVO button and press D [Snapshot Menu]. The VDU screen shows "(x/50)" to tell you how many of the 50 snapshots are used.

2> Press C [Take a snapshot of the stage] to record the output to a snapshot.

3> Press A [Load a snapshot] to load a previous snapshot into the programmer. The VDU screen shows a list of stored snapshots. Use the cursor keys or type the number of the one you want on the numeric keypad, then press Enter. You can then save the snapshot to a memory as usual.

4> Press B [Delete a snapshot] to delete a snapshot from the list. The VDU screen shows a list of snapshots, select the one you want as for the Load option above.

- You need to ensure that the Pearl's internal clock is set correctly if you are using Snapshots, or you will not be able to identify the snapshots afterwards. See page 196 for how to set the clock.

6.1.4 Using shapes in memories

As you would expect, any shapes you have set up will be saved as part of the memory.

If the base value of the shape is not in the programmer (e.g. the central pan/tilt position, for a circle), and the shape is a "User" type, then the memory will contain a "relative" shape. When you recall the memory, the shape will start based on the current position of the fixture. This allows you to create lots of different effects by layering a few different memories - one for the shape, one for the base position. You can either use "Record by channel" mode, and not set the position,

or use the "Off" function to achieve this effect.

6.1.5 Viewing the programmer contents

You can view the contents of the programmer on the VDU screen by pressing View then G [VDU Views] (unless already in the VDU views screen) then D [Programmer].

Down the left hand side of the window, a list of fixtures in the programmer are displayed. Select the fixture you want to view using the up and down arrow buttons.

In the right hand window, the attributes in the programmer for the selected fixture are shown. A "P" indicates that a palette is in the programmer rather than a DMX value set from the wheels.

6.2 Playback

6.2.1 HTP and LTP channels

The Pearl can treat control channels in two ways:

- Dimmer or intensity channels work on the principle of "highest takes precedence" (HTP). If an HTP channel is turned on at different levels in several memories, the highest level will be output. When you fade a memory, the HTP channels fade out with it.

- Moving light channels work on the principle of "latest takes precedence" (LTP). The latest change takes over from any other values, so the most recent memory to be turned on is the one which is output. When you fade a memory, LTP channels do not normally fade (though you can make them if you want, except for channels set to Instant). They set their full values when the memory starts to fade in, and stay there until another value is set. (You can set the value this happens at using the User settings menu).

The fixture personality file tells the Pearl which channels of a fixture are HTP and which are LTP. Normally, only dimmer attributes are HTP, and

everything else is LTP. If a fixture does not have an intensity control channel, the Gobo channel is defined as HTP to make sure the fixture blacks out when a memory is turned off.

6.2.2 Playing back a memory

To play back a memory, raise the fader. (Make sure there are no values in the programmer by pressing the Clear button, because anything in the programmer will override the playback).

- You can turn on more than one memory at once.

- All the HTP (intensity) channels in the memory will fade up with the fader. The LTP (movement) channels will be set as soon as the fader leaves the zero position. You can set the point at which this occurs on the User settings menu. (If you have changed the memory to be Mode 1 or 2, the LTP channels fade as well, except for channels set to be Instant).

- You can Flash the memory by pressing the grey flash button. You can Swop (solo) the memory by pressing the blue Swop button (all other active memories will turn off while the button is pressed). The Flash and Swop buttons only operate in Normal Run mode.

- In Run mode you can pre-position the LTP channels before raising the fader by pressing the Flash button with the Add/Flash Master at zero. This is useful if you want to avoid the fixture "swinging" into position when you turn the playback on.

6.2.3 Changing playback pages

You can change pages to select another 15 memories simply by rolling the Roller to a new segment. You can select 3 different pages of roller using the Roller Page buttons giving 30 possible pages in all.

- Playbacks which are turned on when you change page remain active. The VDU screen shows the name of the active memory in the bottom row, and the name of the memories from the new page in the top row.

- If you want to turn on a playback which is already on from a previous page, lower the fader to zero then raise it again. The memory from the previous page will turn off and the memory from the new page will turn on.

- You can label the current playback page by holding AVO and pressing G [Set Legend], then A [Current page], then entering a label using the Qwerty keyboard.

6.3   Edit

6.3.1 Editing a memory

You can edit any part of a memory you have already saved simply by making the changes and saving the new information on top of the memory.

1>   Press Clear to empty the programmer.

> 2> Turn on the memory you want to edit, so you can see what you are doing. Turn off all other memories to avoid confusion.
>
> 3> Select the fixtures you want to change, and make the changes.
>
> 4> Press Memory.
>
> 5> Press the Swop button for the memory you are editing.
>
> 6> The Pearl will display "A memory already exists on playback!"
>
> 7> Press A [Merge memory] to amend the existing memory. Unchanged information is not affected.

- If you are in "Record by fixture" mode, all attributes of any fixture you've changed will be saved in the memory with their current settings. If you only want to save certain attributes of a fixture, you need to use "Record by channel" mode (press softkey B after pressing Memory).

- You can overwrite the existing memory entirely using B [Replace memory]. This wipes the playback and saves the current programmer as a new memory.

- If the memory contains shapes, and you have selected some new shapes, the original shapes in the memory will be deleted (after a warning). To get round this you need to use Include on the original memory (see next section) to load the shapes into the programmer. Ensure that the playback fader for the memory is at zero (i.e. the shape is not active) when Including the memory.

6.3.2 The Include function

The Include function lets you load selected parts of a memory back into the programmer. (Normally, only manual changes to fixtures are put in the programmer). You can then use this to make a new memory. This is useful if you want to make a memory which is similar to one you already have.

You can also include DMX information from another console connected to the DMX in socket.

When you use Include, you specify which attributes of which fixtures you want to load into the programmer. So, for example, if you have a memory which contains position, colour and gobo information for 8 fixtures, you can use the include function to load only the colour information for 4 of the fixtures into the programmer. You could then "Include" position information from another memory into the programmer, and build up a new memory using information from several existing memories.

> 1> Select the fixtures from which you want to take settings.
>
> 2> Press Include (above the numeric keypad).
>
> 3> Select the Attributes you want to include. The Dimmer attribute includes all other attributes (the buttons light up to show which attributes will be included)
>
> 4> Playbacks containing memories will be flashing
>
> 5> Press the playback Swop button for the memory you want to include. Press Enter. The selected attributes of the selected fixtures will be loaded into the programmer.
>
> 6> Repeat from 2 to include other attributes from the same fixtures, or repeat from 1 to include other fixtures.

- If you want to put the whole memory into the programmer, ensure no fixtures are selected and the Dimmer attribute is selected, then press Include, then the Playback Swop button for the memory to include. Everything will be placed in the programmer.

- If the memory contains shapes, all the shapes and all the fixtures they are applied to will be loaded into the programmer, even if the fixtures and attributes are not selected. The shapes can then be edited, see page 143.

- To Include DMX from the DMX In socket, press softkey A, B, C or D to copy the incoming DMX values into the programmer for DMX output lines A B C or D.

- You can Include a Theatre Stack step to the programmer by entering the step number you want to include and then pressing E [Theatre Stack Step]. If you don't enter a step number, the current step is included.

- You can edit the way the Attributes are grouped (e.g. the colour function always selects the Yellow / Magenta / Cyan functions too). This is called the "Focus Mask". Select the attribute button to change, then hold AVO and press C [User Settings] to enter the User Settings mode, then press C [Specify Attributes for Bank]. The buttons will light to show which attributes are grouped. Press the buttons to include or exclude attributes. Press Exit twice to finish.

6.3.3 The "Off" button

The "Off" button allows you to remove an attribute which has been stored in a memory, as if you never recorded it.

For example, suppose you recorded a memory which had scans at a certain position, with the colour set to green. If you later decide that you don't want a colour recorded at all in the memory, so that the previous colour setting of the scans will be used, you use the Off function to turn off the colour in the memory. You can also use the Off function to remove complete fixtures from a memory.

Using the Off button is not the same as recording an attribute at zero. It is like not recording the attribute at all.

1>   *Turn on the memory you want to edit, so you can see what you are doing.*

2>   *Select the fixtures you want to change.*

3>   *Press the OFF button (one of the blue command buttons) to display the Off menu.*

4>   *To switch off all attributes of the selected fixtures, press Softkey A (this will remove the fixtures from the memory).*

5>   *To switch off selected attributes, press the appropriate attribute button, then use Softkey B and C to set each attribute to Off (the screen shows which attribute will be turned off for each button)*

6>   *Repeat from 3 to turn off other attributes, or from 2 to turn off other fixtures.*

7>   *Press Memory.*

8>   *Press the Swop button for the memory you are editing to save the changes. Unchanged information is not affected.*

- Attributes which are Off are shown on the screen. (The stage output will not change as the output values remain at their last settings).

- Attributes or fixtures set to "Off" can be turned back on again by selecting them in the usual way and changing them using the wheels.

- You can also use this function to turn off fixtures or attributes in a palette entry. Use the procedure above, but instead of editing and recording a memory, edit and record a palette entry instead. See page 138 for how to do this.

6.3.4 Viewing a memory

You can view the contents of a memory by pressing View then the swop button for the memory.

The main part of the display shows the attributes for each fixture stored in the memory. Choose which attribute you are looking at using the Attribute buttons. If a palette is stored in the memory, the palette name is shown rather than the value.

Fixtures   Attribute values   Palette stored in memory
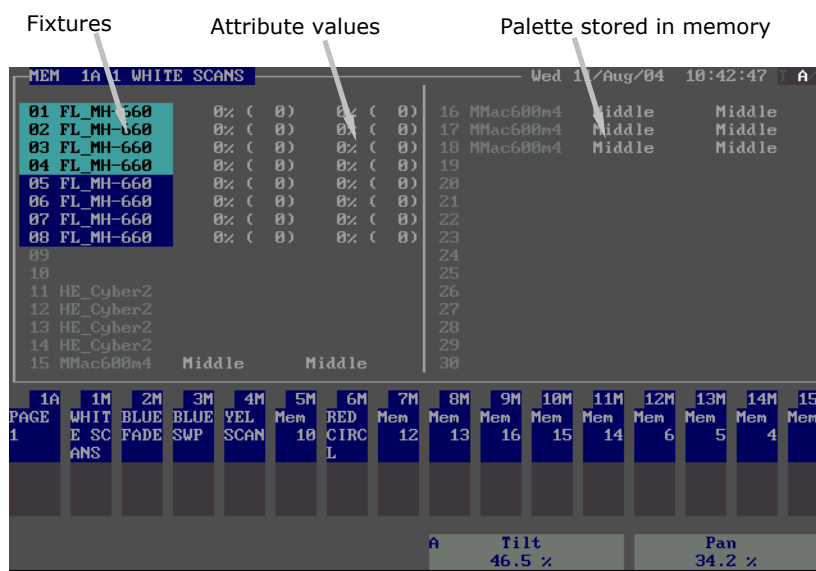
6.4 Copy

6.4.1 Copying a memory

Copying a memory is very simple on the Pearl. You can either create a linked copy (if you change a linked memory, all others linked to it will change too) or a "photocopy", which is a completely new and independent copy of the memory.

To create a linked copy:

1> Hold down the Flash button of the playback you want to copy.

2> If you want to copy to a different page, move the Roller to the new page.

3> Press the Swop button of the playback where you want to store the copy. Release both buttons.

- To create a Photocopy, press the blue Photocopy button before pressing the playback Flash button

- If you have named the memory you copied, the linked memory will have the same name, as will a photocopied memory.

6.5   Delete

6.5.1   Deleting a memory

To delete a memory:

1>   Press the Delete button.

2>   Press the Swop button of the memory you want to delete.

3>   Press the Swop button again to confirm the delete.

- If the deleted memory is linked to others, the linked memories are not affected.

6.6   Timing

6.6.1   Setting fade times for a memory

You can set a fade in and fade out time independently for every memory. The fades only affect HTP (intensity) channels. There is a separate LTP timer which allows you to set movement times. LTP channels which were set to "instant" during Patching (see page 121) ignore LTP fade times.

1>   Press C [Edit Times].

2>   Press the Swop button of the playback you want to set times for

3>   Press Softkey C to set the fade in time, Softkey D to set the fade out time, or Softkey E to set the LTP fade time (Options A, B, and F have no effect on memories and are only used on chases)

4>   Type the new time using the numeric keypad and press Enter to save it.

5>   Softkey G sets the memory mode of the chase to 0, 1 or 2 (described below).

6>   Press Enter to save the changes. If you press Exit, any times you have set will be abandoned.

The effect of the times is shown in the following picture.
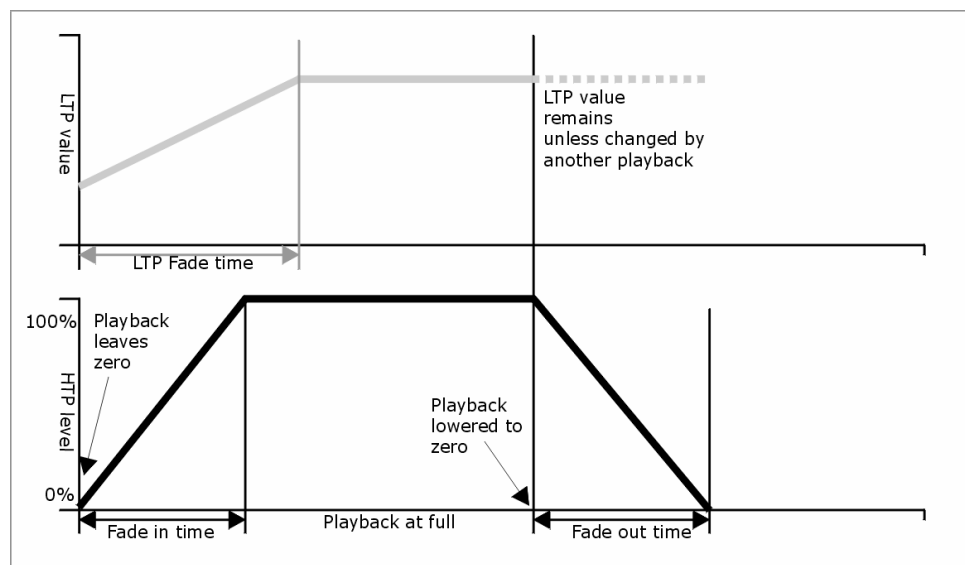
The times you enter are also affected by the memory mode:

- Mode 0 - No timing information is used. The settings on softkeys C, D and E are ignored. The HTP channels fade with the 0-100% position of the playback fader.

- Mode 1 - Channels fade as set by the HTP and LTP fade times (except Instant LTP channels). If you enter times for a Mode 0 memory, it will automatically change to Mode 1. If HTP times are set to zero, the HTP levels will fade with the fader.

- Mode 2 - HTP channels fade as set by the HTP times, or with the fader if times are set to zero. LTP channels are controlled by the fader position (except Instant channels). Set the LTP fade time to 0 to use this mode.

- If the memory includes shapes, and you have set the shape size or speed to "timed" (see page 144), then the shape will change with the LTP channels. The changes will be timed for a Mode 1 memory and controlled by the fader position for a Mode 2 memory. This allows you to create a shape which gets bigger or faster as you push up the fader.

6.7 Advanced options

6.7.1 Recording in Blind mode

The Pearl has a useful function called "Blind mode", which allows you to program memories without altering the output of the console. The contents of the Programmer are saved on entering Blind mode, and restored when you leave Blind mode. Any playbacks turned on continue as normal, and you can make any changes you like without affecting the output.

This is useful if for some reason you need to edit a memory in the

middle of a show without upsetting the current lighting state. Obviously, as you can't see the changes you are making, you will need to have a good idea of what values to set.

1> Hold down AVO and press F [Blind Mode].

2> If you don't want to use the contents of the programmer, press Clear.

3> Make changes to your fixtures as usual. Use the screen or the Graphics Tablet to help you set the right positions, colours etc.

4> Save your changes as usual.

5> To go back to normal, hold down AVO and press Softkey F again. The previous contents of the programmer will be restored (the contents of the programmer from Blind mode will be lost).

•   If you have edited a playback which is already turned on, you will need to turn it off then on again to load the new version.

CHAPTER SEVEN

7. Chases

This chapter contains: Programming a chase; running a chase; setting speed, crossfade and direction; manually controlling the chase steps; setting step times and unlinking; editing a chase using unfold; editing a chase which is running; copying chases; sound activation of chases; chase options.

As well as being used to store static memories, the playback faders on the Pearl can also be used to store chases (sequences of static memories).

7.1 Create

7.1.1 Programming a chase

To program a chase, you have to set up the lighting for each step of the chase, then save it. The contents of the programmer are recorded as a step.

You can either set all the fixtures and dimmers manually for each step, or you can use Include to load in the information from memories you have already recorded.

You cannot use an existing memory as a chase step just by turning it on. You need to use the Include button to load the memory into the programmer.

1> Press the Chase button.

2> Press the Swop button of the playback where you want to store the chase.

3> Set up the lighting for the first step, either manually or by using

> *"Include" on existing memories.*
> *4> Press the Swop button of the playback or Enter to store the programmer contents as Step 1 of the chase.*
> *5> Press Clear (unless you want to re-use the contents of the programmer), then repeat from step 3.*
> *6> Press Chase to finish when you have stored all the steps you want.*

- Press Clear when you have finished saving the chase, otherwise when you try to play it back the programmer will override the chase and you won't see the chase properly.

- The current step number is displayed in the prompt line.

- From the July 2004 software version, you can record shapes in a chase. If the same shape is saved in subsequent steps it will continue from step to step, if not it will stop at the end of the step time. (The Pearl considers the shape to be the same if you didn't press Clear after the previous step, and didn't change the speed, size or spread of the shape from the previous step; or if you Included the shape from the previous step and have not modified it)

- You can set a label for the chase by holding down AVO and pressing G [Set Legend], then pressing the Swop button for the chase, as with memories.

- There is no limit to the number of steps in a chase provided there is enough free memory in the Pearl.

7.2   Playback

7.2.1   Running a chase

To run a chase, raise the fader of the playback. (You can also use the Flash/Swop buttons if you are in Normal Run mode). The chase will start to run.

Wait timer   Fade timer
Step time   Crossfade

- The HTP (intensity) channels in the chase will be controlled by the fader. The other channels (LTP) will be set as soon as the fader moves above zero according to the LTP fade times programmed in the chase. You can set the point at which the LTP channels activate from the User settings menu.

- The bottom part of the display shows the progress of the chase. The Wait and Fade times are represented by bar graphs. The top line represents the Fade in time; the middle line the Fade Out time and the bottom line the LTP fade.

- Press View then Connect to show details of the chase steps on the screen (this screen is described in the Timings section on page 163).

- When in Run mode, you can preload the first step of the chase by pressing the Flash button of the playback with the Add/Flash
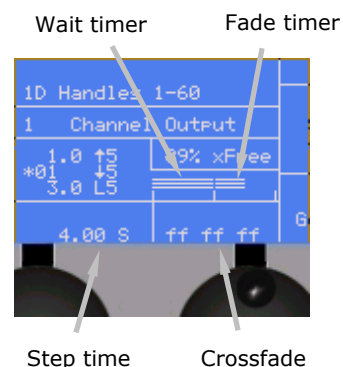
Master at zero.

There are many options you can set to determine the way the chase runs and these are described in the rest of this chapter.

7.2.2 Connecting a chase to the controls

When you run a chase, the playback controls are automatically connected to it. If you turn on a second chase, the controls are connected to the newer chase.

- You can choose which chase is connected to the controls by pressing the Connect button (next to the wheels), then the swop button for the chase you want to control.

- You can turn off the "chase autoconnect" option in the User Settings menu (hold down AVO and press C, then set Option 4) if you don't want the wheels to connect to a chase when you start it. You will have to use the Connect button to control the chase if you do this.

7.2.3 Setting speed, crossfade and direction

The wheels are normally assigned to control the Speed and Crossfade of the chase when you turn it on.

You can save a speed with the chase, so that every time you play it back, it runs at the same speed.

1>   Press A [Chase Parameters].

2>   Set the speed you want using the left hand wheel.

3>   Press A [Save Speed].

- If you are in Run mode, you can also set the chase speed by tapping G [Tap twice to set speed] in time with the music.

- You can change the speed display to BPM (beats per minute) rather than seconds, from the User Settings menu (see page 196).

- If you are doing another operation using the wheels while running a chase (e.g. manually positioning some fixtures), you can make the wheels control speed and crossfade again by pressing the Connect button next to the wheels, then the swop button for the chase.

- You can set the chase back to its programmed speed by pressing Connect, then A [Clear temporary speed].

The chase direction is controlled by the ← (backwards), → (forwards) and ←→ (Bounce) buttons. These buttons can also be assigned as Fixture control buttons (see page 127). Hold down the Avo button and press Softkey B so the display shows [Chase Control Enabled] to use the buttons to control the chase direction.

- You can save the current direction of the chase so it will always start in that direction; Press A [Chase Parameters], then B [Save Direction].

7.2.4 Manually controlling the chase steps

You can take manual control over the connected chase by pressing the Stop button. If the chase is set to "Links Off", it will do this automatically - see the next section for details on Links.

- Press the Go button to restart playback of the chase

- The Snap Back button changes the chase direction the first time you press it; a second press will jump back a step (times and fades are ignored)

- To set the "next" step to be a particular step number, type the step number on the numeric keypad then press Connect.

- Turn either wheel to manually control the fades for this step. You can fade up or down until the fade completes; once a fade has completed it stays at 100%. Once the Fade In, Fade Out and LTP fades are all completed the chase will move on to the next step. The display above the wheel shows the fade up and fade down of the previous step as a percentage. This function can be disabled using the chase parameters menu.

- The ← and → buttons (next to the Go button) change the direction of the chase. If the chase is stopped, these buttons jump backwards and forwards a step.

7.2.5 Viewing chase steps

You can preview the output of a chase step on the display. The chase does not have to be connected or running.

> *1>* *Press View.*
>
> *2>* *Press the Swop button of the chase to view.*
>
> *3>* *Choose the attribute to view by pressing one of the Attribute buttons.*
>
> *4>* *Use softkeys F and G to step through the chase, or type a new step number and press Enter.*

- Values with a "P" indicate that a palette has been stored in the step; the number is the palette number.

You can view the steps of a connected chase by pressing View then Connect. See page 165.

7.3 Edit

7.3.1 Adding more steps to the end of a chase

You can add steps to the end of a chase by pressing Chase, then the Swop button of the chase, and saving more steps in the same way as you did when creating the chase. New steps you save will be added onto the end of the chase.

7.3.2 Editing a chase using Unfold

The Pearl has a powerful chase editing system. The Unfold button places each step of a chase on one of the playback faders as if each step was a memory, allowing you to turn on and edit each step individually.

The display (right) shows the step number, step legend, whether the step is Simple or Complex, and whether links are turned off (-) or on (down arrow).

> *1>* *Press Unfold (one of the blue command buttons), then the Swop button of the chase to be edited*
>
> *2>* *The first 15 steps of the chase are loaded into playback faders 1-15. The display shows details about the steps.*
>
> *3>* *Raise a playback fader to output the contents of that step (fade times will operate as programmed)*

4>   Various Unfold options are available, the details are below.

5>   Press Unfold again to get out of unfold mode.

- To edit the contents of a step: Press Clear to empty the programmer, raise the fader to output the step, make the changes, press A [Record], then the Swop button (1-15) for the step number.

- To change the times for the step, press B [Edit Times], then the flash button for the step, then set the times (see Timing on the following page)

- To Insert a new step, set up the lights for the new step, press C [Insert], then the Swop button where you want to insert the new step. The new step will be allocated to the button you press with a step number half way between the steps either side, and all other steps will be shifted along one. (You cannot use the blue Insert button in Unfold mode).

- To Delete a step, press D [Delete] then the Swop button for the step you want to delete, followed by Enter.

- You can copy a step by holding the Flash button of the step to copy, then pressing the Swop button of the step to copy it to.

- You can renumber the chase to whole numbers by pressing C [Insert], A [Renumber], then Enter to confirm.

- If the chase has more than 15 steps, you can swap to the next 15 steps using softkey F, or the previous 15 steps using softkey E.

- G [Shape Generator] allows you to insert and edit shapes in the chase steps.

7.3.3   Editing a chase which is running

You can also edit chase steps while you are running the chase, without using Unfold. Make sure the step you are editing is not in the middle of a fade, or you might get unexpected results next time you run the chase.

1>   Start the chase by raising the fader. (if Links are On, press the Stop button to pause the chase)

2>   Keep pressing the Stop button to step on to the step you want, or type the step number you want, press Connect then Stop.

3>   Press Clear to make sure the programmer is empty.

4>   Make the changes that you want to the current step.

5>   Press Rec. Step, then Enter, to save the changes to the step.

6>   Press the Stop button to Pause the chase, then press Next or Prev to move through steps of the chase.

- You can set individual times for each step using the Live Time button as follows:

1>   Stop the chase on the step you want to set, as above.

2>   Press the Live Time button to set the times for the current step, or the Next Time button for the next step. The Live and Next step numbers are shown on the display.

3>   Use softkeys A-G to set the times you want (see page 155 for

description of the times)

4> Press Enter to save the settings, Exit to abandon them, or the ML Menu button to toggle the step mode between Simple/Complex (Simple = use the global timings).

5> Press the Stop button to Pause the chase then press Next or Prev to move through steps of the chase. .

- The Review button shows you the step you have just edited, including all the fades. When you press Review, the chase jumps back to the step before the one you are on, then runs the step you have edited to show you the overall result. The chase does not have to be stopped to use Review.

- To insert a new step at the current point in the chase: Set up the lights how you want them for the new step, then press the blue Insert button, then press Enter. (If you want to insert a different step number, type it before pressing Enter). The Set Times menu is displayed. Change the times if you want to, then press Enter to insert the step.

7.4   Copy

7.4.1   Copying chases

You can copy a chase exactly the same as a memory – hold down the Flash button of the chase you want to copy, then press the Swop button of the playback you want to copy it to. The copied chase will be linked to the original, and any changes made to either chase will affect both chases.

If you want an unlinked copy, press the Photocopy button before starting the copy.

7.5   Delete

7.5.1   Deleting chases

You can delete a chase exactly the same as a memory. Press the blue Delete button, then press the Swop button of the playback containing the chase. Press the swop button again to confirm the delete.

7.5.2   Deleting a step from a chase

You can delete a step from the connected chase by pressing the blue Delete button, typing the step number to be deleted, pressing Enter then A [Yes].

You can also delete a step when a chase is Unfolded by pressing D [Delete] then the Swop button for the step you want to delete.

7.6   Timing

7.6.1   Speed and crossfade controlled by wheels

The speed and crossfade of the most recently turned on chase is controlled by the wheels. You can "connect" the wheels to a different chase by pressing the Connect button and then the Swop button of the chase you want to connect.

## 7.6.2 Setting global step or fade times and unlinking

You can set step times globally for the whole chase and individually for each step. You can also unlink the steps, either for the whole chase or for individual steps, so that the chase pauses and waits for you to press the Go button. This can be useful if you are using the console for theatrical lighting cues (although it's easier to use the dedicated theatrical mode for this).

To set the global times for a chase:

1> Press C [Edit Times], then the playback button for the chase.

2> Press Softkey A-F to select the time parameter to set (the times are described below).

3> Type the new time value using the numeric keypad and press Enter

4> Press G to set Link on or off for the whole chase. If link is on the chase runs automatically. If off, you run each step manually using the Go button (a chase like this is called a "stack").

5> Press Enter when you have finished. If you press Exit, any changes you have made will be lost.

The times are:

A [Wait In] - Delay before the fade in starts
B [Wait Out] - Delay before the fade out starts
C [Fade In] - Time to fade in
D [Fade Out] - Time to fade out
E [LTP Fade] - Time for the LTP (movement) channels to fade over
F [LTP Wait] - Delay before the LTP channels start to move
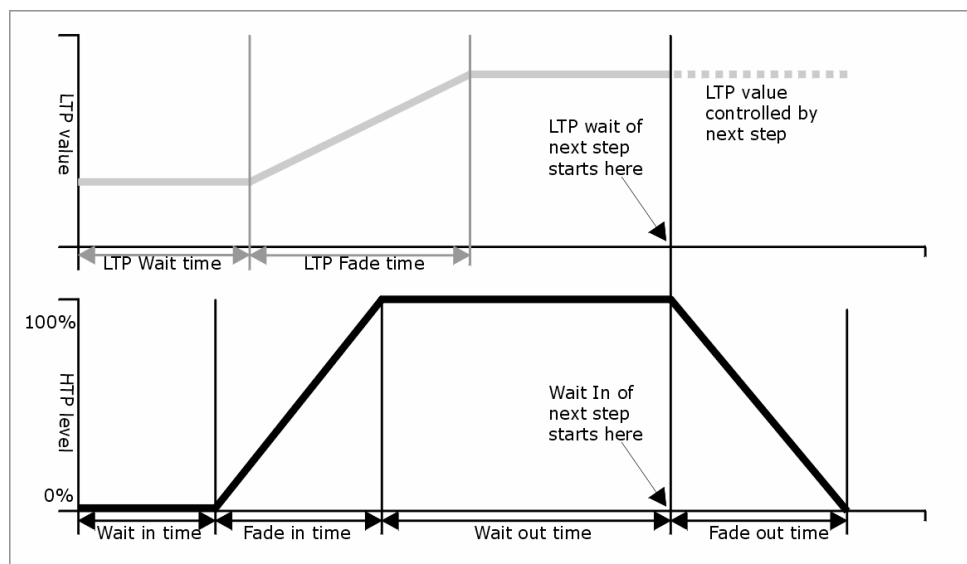
- You can enter minutes as part of the time - press the decimal point twice, a colon (:) will appear. e.g. to enter 20 mins 10.5 seconds, type 20..10.5 (the display will show 20:10.5).

7.6.3 Setting times and links for individual steps

You can set the fade in and fade out times independently for each step/cue. Chase steps with individual times are called Complex steps, if they use the global settings they are called Simple steps. To set independent times it's easiest to use Unfold, but you can also stop the chase and use the Live Time button as described on page 162.

1> Press Unfold then the playback swop button for the chase.

2> Press B [Edit Times], then the playback swop button for the chase step you want to set

3> Press Softkey A-F to select the time parameter to set, and type the time value (as described above).

4> Press G to set Link on or off

5> Press Enter when you have finished. If you press Exit, any changes you have made will be lost.

• Any changes you make will automatically change the step to a Complex step.

• If you want to return the step to be a Simple step, using the global times and link settings, press the ML Menu button while in the Edit Times screen until that the display top line shows "<ML> Save as Simple" (you may have to press it twice), then press Enter. Any times you have set will be deleted.

7.6.4 Viewing timing information

You can view the timing settings of a connected chase by pressing View then Connect. (when View is set to LCD views; if the top line of the display shows "VDU views" when you press View, press G [LCD views])

For each step, the first line shows the step number, whether links are off or on for that step (Off="-", On=down arrow), and whether the step is Simple (S) or Complex (C).

The second line shows the Wait In, Wait Out and LTP Wait times for the step.

The third line shows the Fade In, Fade Out and LTP fade times for the step.

The active step is always at the top of the list, and the list moves up as the chase runs.

A similar display can be shown on the VDU screen by pressing View, then G [VDU views] then Connect.

At all times when a chase is running, the bottom of the screen shows bargraphs

"Wait In" progress

Next step number

Chase number

Current step number

LTP Wait progress

"Wait Out" progress

which show the progress of the wait and fade times.

"Fade In" progress

The left hand section of the bargraphs shows the Wait timers. The right hand section shows the Fade timers.

To the left of the bargraphs are numbers which give the wait or fade progress as a countdown from 9 to 0.

LTP fade progress   "Fade Out" progress
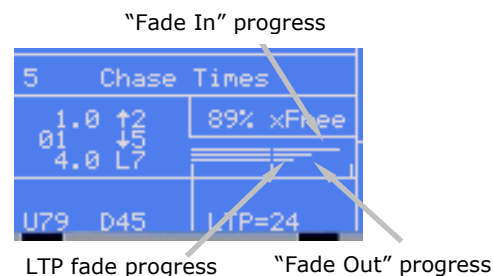
The bottom left of the VDU screen shows similar bargraphs when a chase is running. The progress figures are to the right of the bargraphs and are given as a 99 to 00 countdown. "N" is the next step and "L" is the live step.

Wait timers   Fade timers   progress %
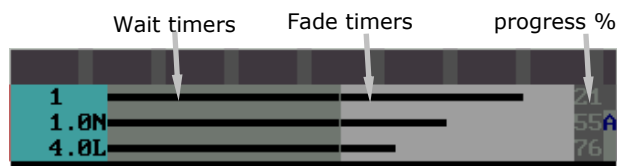
7.6.5 Sound activation of chases

The Pearl can use bass, mid or treble frequencies from its audio input to trigger chases. You can select whether the chase will step on low frequencies, mid frequencies or high frequencies.

1> *Turn on the chase (or Connect it) and press A [Chase parameters]*

2> *Press E [Sound to Light] to select Low, Mid or High trigger.*

3> *Turn the key to Run mode and press E [Enable sound to light] (this is the global Sound to Light enable).*

3> *When the chase is turned on, it will step in time to the sound signal*

4> *Press E, again, to turn off sound activation.*

• Turn the chase links Off and set fade times to zero to get a true sound to light chase.

• You can make some linked steps and some unlinked steps to give a chase which runs on a few steps for every audio pulse.

• The sensitivity of the audio input can be set using an internal PCB jumper to enable use of a microphone rather than line level audio. See page 110.

7.7 Advanced options

7.7.1 Chase options

Each chase has options which can be set to affect the way it runs. Press A [Chase Parameters]. You need to have a chase "connected", or the softkey will not do anything. The options you set are individual for each chase.

The options are:

A [Save Speed] - saves the current speed of the chase (set using the left hand wheel)

B [Save Direction] - save the direction of the chase (set using the direction / bounce buttons or options, see below)

C [Normal / Random] - turn on random mode (steps are executed in random order) - press to change the mode. Turn off random mode when editing a chase, or you won't know which step you are going to get next.

D [Stop on final step] - makes the chase stop on the final step. If the final step is a blackout, the chase will appear to turn itself off, so you can just press Go whenever you want to make it happen again

E [Sound to light] – as described above

F [More...] – Gives a second screen of options

A [Fader start options] - (press the button to cycle through the options):
Fader will reload chase (every time you turn on the chase it starts at step 1)
Fader stops, go to start chase (the chase will not run until you have pressed Go after you turn on the chase)
Fader stops/starts chase (every time you turn on the chase it continues from where it left off)

B [Skip times options] – Allows you to skip the first wait and/or fade of a chase. You often want to do this so the chase starts as soon as you raise the fader. (Press the button to cycle through options)…

Skip first wait time (The wait time is missed when the chase is first turned on)
Skip first wait and fade time (Both wait and fade times are missed when the chase is first turned on)
Wait and Fade for all steps

C [Manual mode allowed / disallowed] – If set to Allowed, lets you manually fade a paused step by turning the left hand wheel for the HTP channels and the right hand wheel for the LTP channels.

D [Speed wheel allowed / disallowed] - Lets you change the chase speed using the left hand wheel. You might want to turn this off if you don't want the console operator to be able to change chase speeds at playback time.

E [Takeover after Go] - If this option is Disabled, when you have a chase waiting for the Go button, and you turn on a memory, the LTP channels will change to those set in the memory. When you press the Go button, the LTP channels will remain set as in the memory and will not update to the settings in the chase step. When the option is enabled, the LTP channels will update to the settings in the chase step when you press Go.

For example, you are about to press Go to set some fixtures to Red. You turn on a memory, which sets the same fixtures to Blue. If the Takeover After Go option is enabled, then pressing Go will set the fixtures to Red, otherwise the fixtures will remain in Blue.

CHAPTER EIGHT

8. Theatre stack

This chapter contains: Setting theatre mode; theatre controls; plotting a cue; naming a cue; setting fade times; jumping to a cue; running a theatrical show; advanced options.

Theatre mode allows you to use the Pearl like a standard theatrical console, where you program your show as a sequence of cues, then run the show just by pressing the Go button at the appropriate moment. Playback faders 12-15 become dedicated cue masters.

8.1 Create

8.1.1 Setting theatre stack mode

In program mode, press B [Theatre stack programming]. The Pearl displays the theatre mode startup display. Press Enter to start.

- When theatre mode is enabled, you can't access playbacks 12-15 on any page; if you intend to use Theatre mode it is advisable not to program these playbacks. Any programs are kept and when you turn off Theatre mode you will be able to access them again. Chase Autoconnect mode is disabled when theatre mode is turned on; the theatre stack is always connected to the controls.

- To get out of the theatre menu, press G [Quit]. The Exit button is disabled in the theatre menu. This does not turn off theatre mode, but allows you to use the rest of the console.

- To turn off theatre mode completely, at the main menu (not the Theatre menu) press B [Theatre stack programming], then press D [Exit Theatre Programming].

- Theatre mode programming is not deleted when theatre mode is turned off.

- While theatre mode is enabled, the swop button for Playback 12 will flash when the playback fader is at zero.

8.1.2 Theatre controls

While theatre mode is turned on, Playback faders 12-15 have special functions assigned to them.

Fader 12 is the Master fader, controlling the overall intensity of all lights.

Fader 13 controls the Fade In of the next step, when it is stopped.

Fader 14 controls the Fade Out of the previous step, when it is stopped. Faders 13 and 14 operate as crossfaders.

Fader 15 controls the LTP fade timer, when it is stopped.

The Swop and Flash buttons above 13, 14 and 15 are Stop and Go buttons for each of these functions.

8.1.3   Plotting a cue

Plotting a cue is very similar to saving a memory. You need to be in Program mode to record cues.

The Pearl refers to cues as "Steps".

1>   If you are not already in "Theatre mode" press B [Theatre Stack Programming] at the main menu.

2>   Press Clear to make sure the programmer is empty.

3>   Set up the cue, either using the preset faders or typing in the levels for each channel (see page 129). You can also select fixtures and use the wheels and attribute buttons to set up the cue.

4>   If the current step number on the display is different to the one you want to use, type the step (cue) number

5>   Press D [Record], then B [Record Stage] to record the current output of the console, or D [Record programmer] to just record what you have changed in step 3.

6>   If there are no steps, the Pearl will ask for the number of the first step. Type 1 and press Enter.

7>   Press Clear.

8>   Repeat from 3 to plot more cues.

- The Pearl will automatically allocate whole numbered cue numbers as you save cues. You can number cues 1.1, 1.2 and so on, this allows you to insert up to 9 cues in between existing cues without changing the numbers.

- The top line of the display shows the Current Step number. This is the step (cue) which will be used for recording or editing. If you type in a step number this is shown as the Input Step.

- Softkey A [Record Mode] sets the console to Record By Fixture or Record by Channel. This is described on page 147.

- B [Record Stage] will record the whole output of the console, as you see it. This is useful if you want the cue to represent exactly what's on the stage. D [Record Programmer] will record only what you have changed since you last pressed Clear.

- You can use an existing memory to form a cue by either using Include (see page 152) or, if you only want dimmer levels, just turn the memory on and use the [Record Stage] option.

- Cues can include moving light positions and shapes. Use softkey B to set up shapes (see page 141), and use D [Record Programmer] in the record menu to record it in the cue (if you use B [Record Stage] the shape will not be recorded). The shape will stop when the next cue starts, unless it is also recorded (unchanged) in the next cue.

- The cues you have saved are displayed on the VDU screen. You can also display them on the LCD screen by pressing View then Connect (next to the wheels) .

- If you want to run a chase from a cue, you can use an Autoload to do this (see section 8.4)

8.1.4   Running a chase or memory with a cue (Autoload)

If you want to run a chase as part of a cue, or automatically turn on an existing memory, you can assign an Autoload to the step.

Autoloads can either turn on or turn off a playback. A Fade Up autoload will turn on a playback, a Fade Down autoload will turn it off.

1>   Press A [Advanced].

2>   Press B [Assign a fade up autoload] or C [Assign a fade down autoload]

3>   Press the Swop button of the playback to be turned on (or off).

The playback will turn on when the cue runs and will remain turned on until a Fade Down autoload turns it off.

- Each cue can have only one autoload, either a fade up or a fade down.

- The memory to load can be from any page, but it will be loaded into the same playback number that it is saved in. If this playback is active on the current page, it will be turned off and replaced by the autoload memory.

- Autoloads are shown on the right hand side of the VDU screen. A fade up autoload has an up arrow, a fade down autoload has a down arrow.

- You can set a fade time for the autoload using D [Set autoload fade time]. Type the fade time then press Enter. Fade times only work to the nearest second.

- You can delete the autoload from the current cue by pressing E [Delete Autoload] then pressing Enter.

8.1.5   Naming a cue

Type the step number to be named, then press E [Set Legend]. Enter the legend on the QWERTY keyboard. While you are typing, the input is shown on the VDU screen.

The name of the live cue and the next cue is displayed in the cue list on the VDU screen.

8.2   Timing

8.2.1   Setting fade times for a cue

Each cue can be programmed to have its own Fade In and Fade Out times. You can also set a separate fade time for LTP (movement) channels in the cue, and you can set wait times to delay the start of the fade.

Press C [Set Times] to set the timing for the current step/cue. To set the times for a different cue, type the cue number before pressing C [Set Times]. to show the options.

You can also press the Live Time button (next to the wheels) to set the times for the current step.

1>   Press Softkey A-F to select the time parameter to set (the times are described below).

> *2>* *Type the new time value using the numeric keypad and press Enter*
>
> *3>* *Press G to set Link on or off. If link is On the next cue will run automatically after the Wait Out time. If off, you run each step manually using the Go button.*
>
> *4>* *Press Enter when you have finished. If you press Exit, any changes you have made will be lost.*

The times are:

A [Wait In] - Delay (after you press Go) before the fade in starts
B [Wait Out] - Delay (after you press Go for the next cue) before this cue starts to fade out
C [Fade In] - Time to fade in
D [Fade Out] - Time to fade out
E [LTP Fade] - Time for the LTP (movement) channels to fade over
F [LTP Wait] - Delay before the LTP channels start to move

- Links are set to OFF by default, so that you press the Go button for each cue. If you set links to On for a cue, the next cue will run automatically after the "Wait Out" time.

- You can enter minutes as part of the time - press the decimal point twice, a colon (:) will appear. e.g. to enter 20 mins 10.5 seconds, type 20..10.5 (the display will show 20:10.5).

8.2.2 Displaying the cue timings

Press View then Connect to display the cue timings on the LCD screen. When you are in theatre mode, the cue timings are permanently displayed on the VDU screen.

The list of cues automatically moves so that the current step is at the top.

For each step, the first line shows the step number, whether links are off or on for that step (Off="-", On=down arrow), and whether the step is Simple (S) or Complex (C) (theatre stack steps are always Complex.)

The second line shows the Wait In, Wait Out and LTP Wait times for the step.

The third line shows the Fade In, Fade Out and LTP fade times for the step.

8.3 Playback

8.3.1 Running a theatrical show

If you have just been editing, you may need to type 1 then F [Cut to Live] to set the console to cue 1. You should also turn the key to "Run" to make sure you can't accidentally change anything.

The LCD display shows the current (live) cue/step and the next cue/step numbers. To the right of this, bargraphs show the progress of the fades (see page 165 for more detail on the bargraphs).

In HTP fade   Out HTP fade

next step

live step

LTP fade

The VDU screen shows a list of the cues with legends if you have entered them. The current cue is highlighted with a grey background and bright lettering. The next cue is highlighted in light blue.
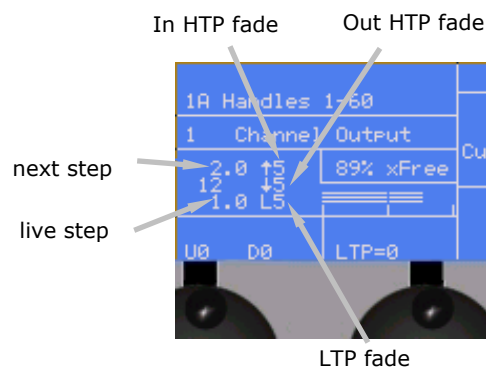
For automatic cues, you can simply press the Go button next to the wheels. The console will carry out the fade with the times you programmed.
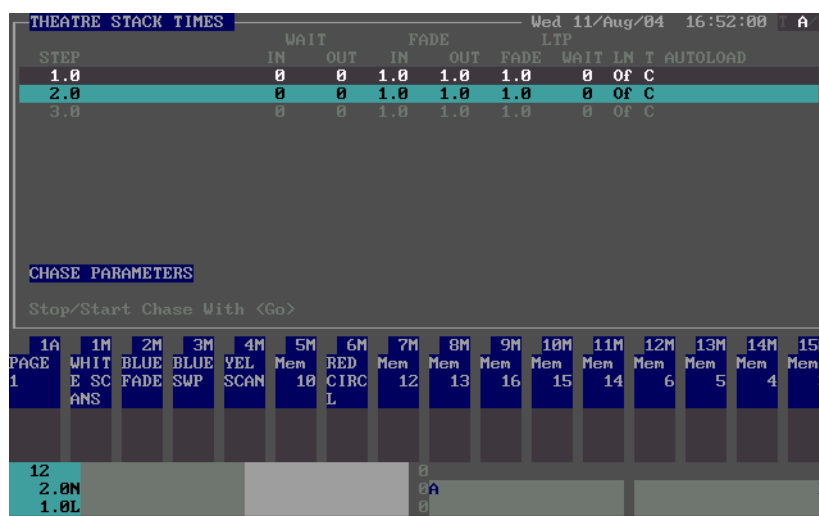
If you want to manually control a fade, you can use the in, out and LTP faders (13, 14 and 15) or Go/Stop buttons to operate the cue. The display shows the percentage of fade left to go. When the fade is completed for that fader, the display shows "0". When Fade In, Fade Out and LTP all show "0", the console moves on to the next cue. (The picture above shows the in, out and LTP fade displays all at halfway, or "5")

Once the display shows "0" you cannot reverse the fade using the fader.

- You can jump to a step by typing the step number on the keypad then pressing Connect (next to the wheels). The cue is loaded but does not start until you press the Go button.

- When the Add/Flash master is at zero, the Theatre Stack Go function of the playback Flash buttons is disabled. When the Swop master is at zero, the Stop function of the blue playback swop buttons is disabled.

8.4 Edit

8.4.1 Editing a cue

You can edit a cue you have saved as follows:

1>   Press Clear.

2>   Ensure the Dimmer attribute is selected.

3>   Press Include (above the numeric keypad)

4>   Press E [Include Theatre Stack Step]

5>   Type the step number to be edited and press Enter.

6>   Make the changes you want using the preset faders or by entering new levels.

7>   Press D [Record], then D [Record programmer].

8>   Press Clear to clear the programmer. The cue will be updated.

8.4.2 Jumping to a cue

You can change the cue being edited by typing the cue number then pressing Enter. If you want to output this cue, press F [Cut to Live] (fade times are ignored).

8.4.3 Inserting a cue

You can insert a cue between two existing cues by typing a cue number in between the two existing cues when saving the step.

8.4.4 Renumbering cues

Press A [Advanced] then A [Renumber], then F [Yes], to renumber all the steps to whole numbers.

8.4.5 Copying a cue

Press A [Advanced] then F [Copy current step to…], type the number for the new cue and press Enter.

8.5 Delete

8.5.1 Deleting a cue

Press the blue Delete button, then type the step number to be deleted and press Enter.

You can delete all steps by pressing A [Delete All Steps].

8.6 Advanced options

8.6.1 Advanced theatre options

Press A [Advanced] to display the Advanced theatre options menu.

The options are:

A [Renumber] – Renumbers all cues to whole numbers.

B [Assign a fade up autoload] – Assigns a memory or chase which will be automatically loaded and run when the fade-in for the cue starts.

C [Assign a fade down autoload] – Allows you to turn off a memory or chase when the cue starts.

D [Set autoload fade time] – Allows you to set a fade time for the autoload.

E [Delete autoload] – Deletes the autoload memory from the current cue.

F [Copy current step to...] – Allows you to copy the current step to a new step.

CHAPTER NINE

9. The graphics tablet

This chapter contains: Connecting the graphics tablet; using the tablet; selecting fixtures on the tablet; changing the position of the fixtures; changing colours and other attributes; storing palette entries; other functions.

The graphics tablet is an accessory to the Pearl. On "Touring" models it is fitted in the flightcase to the right of the console. It allows you to use a pen (or a puck) to select fixtures, groups, colours, and position the fixtures by simply drawing with the pen. When you use the Pearl's Tracking mode you can instantly make all your fixtures point at one place on the stage just by pressing on the tablet.

The tablet makes programming and operating a show on the Pearl much more intuitive. If you don't have a graphics tablet you're missing out!
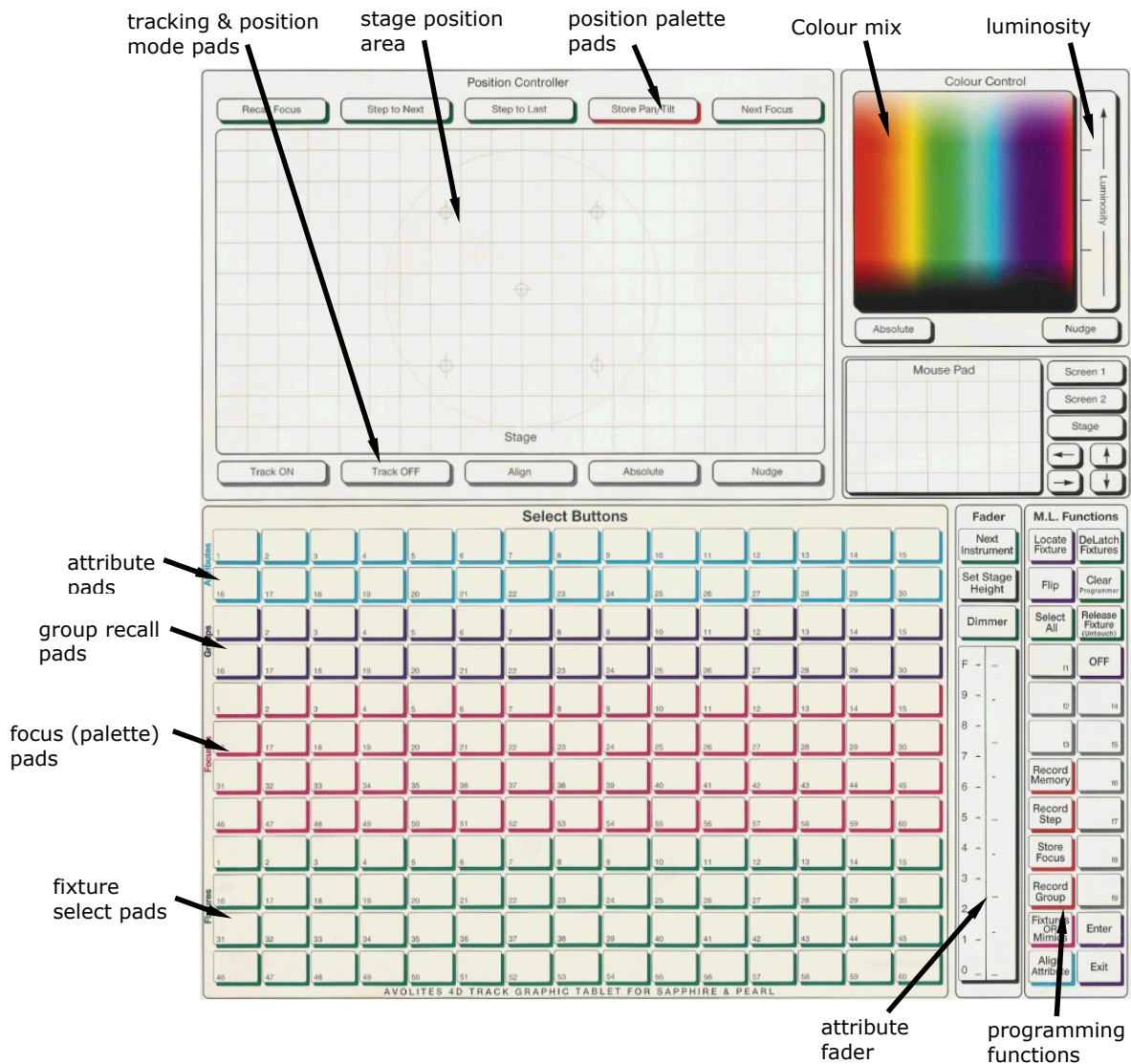
9.1 Create

9.1.1 Connecting the tablet

The tablet is connected to the Serial port on the Pearl. It is powered through the serial port. You must turn off the Pearl when connecting the tablet. The pen or puck should also be plugged into its socket on the rear of the tablet. Some tablets have an on/off switch on the rear.

The power LED on the tablet should be lit, and when you touch the pen to the tablet surface, the status LED should light up.

User Setting 7 (Press AVO and Softkey C) must be set to "G-Tablet" to enable the tablet. If the tablet does not respond, change the setting of User Setting 7 a few times until it comes back to "G-Tablet".

9.1.2 Using the tablet

To use the tablet, press the pen onto it (the button on the side of the pen doesn't do anything). A quick press is like pushing a button on the Pearl. You can also draw on the tablet by keeping the pen pressed down while moving it. This is used to move fixtures or change attributes.

The tablet has a paper overlay on it, with printed pads which simulate buttons or other controls. You can write your fixture names, group names, attributes, palette entries and even draw your stage layout on the overlay so that you know what's what. Spare overlays are available from Avolites.

The Pearl will behave as if you are pressing buttons on it in the normal way, so the LEDs and the display will change as you use the tablet. Many of the functions of the Pearl are quicker and easier using the tablet. Sometimes you might find it easier to do part of the function on the tablet and part on the console. The end result is the same.

9.1.3 Selecting fixtures on the tablet

To select a fixture, press the pen onto one of the "Fixtures" pads marked on the tablet overlay. You will see the fixture Swop button on

the Pearl light up as if you'd pressed it. The first 60 fixtures which are patched are available on the tablet.

Fixture select pads

You can select a group in a similar way. Press the pen onto one of the Group pads marked on the overlay. You will see all the fixtures in the group recalled on the Pearl. Only the first 30 groups are available on the tablet.
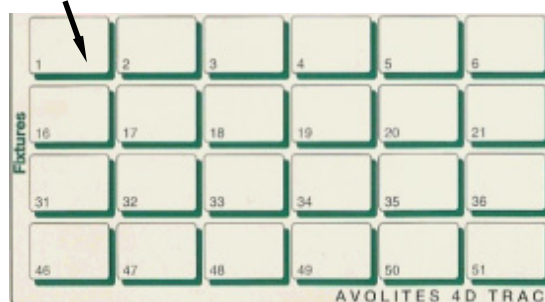
9.1.4 Changing the position of the fixtures

You can control the position of the selected fixture by drawing on the Stage area of the tablet. The selected fixtures will move to the pan-tilt position specified by the pen on the tablet. You can move the fixtures to a particular position just by touching the pen to a particular place on

the tablet Stage area.

If you press the pen on the Nudge pad, the tablet will go into Nudge mode. Now when you draw on the Stage area of the tablet, all selected fixtures will move relative to their current positions. This can be useful if you want to slightly reposition a fixture or a group of fixtures. Press the pen on the Absolute pad to turn off this mode.

The top right corner of the VDU shows A for Absolute or N for Nudge.

If you have trained the Pearl, which is described on page 131, you can turn on Tracking mode by pressing the pen on the Track ON pad. When you press the pen on the stage area of the tablet, all the lights will point at the same place on the stage. If you draw the stage layout on the tablet overlay, you can instantly focus the fixtures on a specific point on the stage just by pressing the pen on the tablet.

9.1.5   Changing colours and other attributes

If the fixture can do colour mixing, you can set the colour by drawing in the colour control area of the tablet. There is a colour Nudge pad which allows you to change the colour slightly as for positions. The colour Absolute pad lets you set up a new colour. The Luminosity bar sets the brightness of the colour.

You can change individual attributes of selected fixtures by pressing the pen on to one of the attribute pads, then (without lifting the pen) drawing up and down on the tablet.

You can also use the fader bar to change attributes, press the pen on the attribute pad you want to change then draw up and down on the fader bar.

Press the pen on the Dimmer pad above the fader bar to allocate it to the dimmer attribute.

There is an Align pad and a Flip pad which allow instant access to the functions on the console (see page 128).

9.1.6   Recalling palette entries (focuses)

You can recall palettes 1-60 by pressing the pen onto one of the Focuses pads.

9.1.7   Storing palette entries (focuses)

You can store palette entries from the graphics tablet. The tablet refers to these as Focuses, which is what they were called in earlier Avolites consoles.

The buttons above the stage area allow you to edit and save position palettes. Press the pen on the Recall Focus pad, then press the pen on a focus pad to select all the fixtures in that palette entry and set the values. You can move all the fixtures together, or the Step to Next and Step to Last pads on the tablet will step through the fixtures one at a time. When you have made the changes, press the pen on the Store Pan/Tilt pad to store the changes back into the same palette entry.

You can also change other attributes in a palette, but to store changes other than pan/tilt you use the Store Focus pad on the right hand side of the tablet.

9.1.8   Programming functions on the tablet

The tablet has a selection of other function pads down the right hand side, including Locate Fixture, Flip, Select All, Clear (programmer), Off, Record Memory etc. These have the same functions as pressing the appropriate button on the Pearl.

You can create a group using the tablet, just select the fixtures you want in the group, press the pen on the Record Group pad, then on the group pad where you want to save the group.

The Release Fixture pad is similar to clear, but it only removes from the programmer fixtures which are selected.

The DeLatch Fixtures pad deselects a fixture but leaves any changes in the programmer.

The F4 and F5 pads provide special functions on fixtures which have been trained for Tracking:

- The F4 pad moves positioning between selected fixtures. On each press of the pen on this pad, all selected fixtures will take on the position of the next fixture. For example if 3 fixtures are selected, then fixture 1 will move to the XY position of fixture 2, 2 to 3 and 3 to 1.

- The F5 pad provides circle open-close movement on a range of fixtures. If the pen is placed on this pad and moved in a forward direction, the spot cast on the stage by the selected fixtures, will move outwards from a centre point. The centre point is the average XY position of the spots. For example, if the spots are arranged in a circle then the circle will expand. If the pen is moved downwards then the spots will move towards and through the centre point. In the example of the circle, the circle will shrink, cross through the centre and expand in the opposite direction.

The arrow pads simulate the cursor arrow buttons on the console.

Other pads in this area, and the Mouse Pad area above, are for future expansion.

9.1.9 Tablet status on the VDU monitor

In the top right hand corner of the VDU monitor are 3 letters, T A and N, which mean the following when they are lit up:

T: Tracking mode is enabled
A: Absolute position mode is enabled
N: Nudge mode is enabled

9.2 Advanced options

9.2.1 Extending the tablet cable

You can extend the tablet cable either with a 25-pin D straight through cable, or an RJ45 extension cable if the tablet is fitted with an RJ45 connector.

An Avolites Riggers Remote cable can be used if modified so that pin 25 is connected straight through.

An RJ45 extension cable must be connected straight through with an RJ45 plug on one end and an RJ45 trailing socket on the other end.

C H A P T E R   T E N

10. Running the show

This chapter contains: Run modes, channel mimics, master faders, manual control during a show

10.1 Playback

10.1.1 Run modes

When you finish programming, back up the console to disk before you start the show (see page 194). Then turn the key to Run mode to make sure you can't accidentally change anything.

When you are running a show, there are two modes available to you, normal Run mode, where you can turn on anything you have programmed but can't control anything manually, and Takeover run mode which allows you to take manual control if you want. The mode also affects how the Swop and Flash buttons on the console operate. There is also "2 preset mode" which you have to enable in the User Settings menu, see section 10.2.

You can select the mode by pressing A [Toggle mode]. The mode is shown on the top line of the display.

- **Normal Run mode**: the Flash and Swop buttons on the handles and playbacks work as flash buttons. The "Flash" button adds the function into anything else which is on. The "Swop" button turns on the function, but turns off everything else while the button is held down. The programmer is cleared and you can't manually control any LTP channels. You can control HTP channels using the preset faders.

- **Takeover run mode**: the Swop buttons on the handles allow you to select dimmers or fixtures for manual control. This lets you add to or change your programming in real time during the show. The Flash buttons on the handles recall palette values (but unless you are used to the Pearl, it is easier to use the dedicated Palette buttons). The faders still control the intensity of the dimmers and fixtures. The Flash and Swop buttons on the playbacks are disabled.

10.1.2 Master faders

In the bottom left hand corner of the console are the Master Faders. These allow overall intensity control of the whole console.

- The Add/Flash and Swop masters control the intensity of the Flash and Swop buttons on the playbacks. This allows you to flash the playbacks to a certain level. It also allows you to disable the Flash buttons by setting the master at 0. (If you turn the Swop master to 0 you will get a blackout if you press a Swop button).

- The Preset Master controls the overall intensity of any channels turned on in the Preset faders.

- The Grand Master controls the intensity of all output from the console.

Normally you would set this at full, and use it if you need to quickly fade out all the lights.

10.1.3 Manual control during a show ("Busking")

If you have not had as much programming time as you would have liked, you might need to make up some additional effects during the show. Fortunately the Pearl is designed with this in mind and there are lots of features to spice up your life. You need to be in Takeover Run mode to do this stuff.

Instant palettes: Select some fixtures, press Focus, then select a palette option from the softkeys (or press a grey Flash/Palette button). When you recall a palette value instantly, it gets placed in the programmer. This means that the palette will override any memories you later turn on, until you press "Clear".

Fading palettes: You can "fade" to a palette value by selecting the fixtures you want to change, typing the fade time (e.g. "2" for 2 seconds), pressing Focus, then using the softkey menus to recall the Palette you want (e.g. Green). The selected fixtures will change to Green over a 2 second period. If you fade to a palette value, the palette does not go into the programmer. This means that when you turn on a new memory, the fixtures will change to the new memory rather than being overridden by the palette.

Palette master time: You can set a Master Time option in the Palette Options so that all palettes will fade without you having to type in a time. Press Focus, then G [Options], then A [Master Time]. Type a new time and press Enter. If you want instant palettes that don't get put in the programmer, you can set the master time to 0.1 seconds.

Changing all fixtures in a memory: You can apply a "quick palette" to all the fixtures in a memory (without having to select the fixtures) by pressing Focus, holding down the softkey for the palette you want, then pressing the Swop button of the memory. If you type a number after pressing Focus, the palette values will fade over the time you typed. This palette is not placed in the programmer, so the next LTP changes will overwrite it. (User Settings option 6 must be turned on for this to work)

Nudge mode: You can also change the position of fixtures; the easiest way to do this is to use "Nudge" mode on the graphics tablet. This allows you to sweep selected fixtures around their programmed position by drawing with the pen, so you can alter the height of a chase or shape in real time.

Tracking: If you have trained the desk for Tracking, you can (with practice!) follow someone on the stage or move fixtures to point to a soloist.

Manual control: You can control any attribute of a fixture manually exactly like when you were programming. This requires care to look good; using the preset palettes is usually a better bet.

You cannot add new shapes in Run mode. You need to have some shapes saved in memories which you can then turn on.

10.2 Options

10.2.1 Two-preset mode

You can use the top and bottom preset faders to control dimmers patched on the 1-30 faders in a standard "two preset" mode, using the A and B Masters as preset masters. In this mode, fader 31 controls the same dimmer as fader 1, fader 32 controls the same as fader 2, and so on. This allows you to set up two different lighting states and fade between them using the A and B masters, as you would on a basic lighting desk.

To enable Two preset mode, set User Setting 1 to "2-preset". (Hold AVO and press Softkey C to get the user settings).

In this mode, anything patched to the top faders 31-60 is not accessible using the faders, however programmed memories and chases will play back as if in Normal Run mode. The Playback Master fader is used as the B Master in this mode and does not control Playback level. All playbacks will run at full level.

10.2.2 Temporarily locking the console

You can temporarily lock the console by typing a 4 digit code then pressing C [Lock Desk], then Enter. All the controls on the panel will be disabled. Enter the code again to unlock the console.

This is useful to prevent passers-by or sound engineers tampering with the console if you need to leave it unattended; it is not secure as you can simply reset or re-power the console to remove the lock.

10.2.3 Channel mimics

If you are in normal Run mode, the LEDs on each handle mimic the intensity of the fixture or dimmer controlled by that handle (i.e. they are lit if it is turned on).

If you are in Takeover Run mode (or Program mode), you can choose between "Mimic" mode, or "Fixture" mode where the LEDs show you which fixtures are selected for manual control.

You select the mode by holding down the Avo button and pressing Softkey A. The button shows "Preset LEDs = Fixtures" (or mimics) depending on the mode. You can also change this mode using the Graphics Tablet.

CHAPTER ELEVEN

11. Automated playback (script files)

This chapter contains: Script files, using script files in Run mode.

Script files are a powerful feature of the Pearl which allow you to record a show in real time using the playback faders, then play back the show automatically, synchronised to an external MIDI time code source, or using the Pearl's internal clock. This is very useful for repeated light shows such as at exhibitions or in fixed displays.

The script file is simply a list of instructions to the Pearl which specify actions at certain times. The easiest way to make a script file is to get the Pearl to record your actions as you do them, but you can also enter commands individually.

11.1 Create

11.1.1 Recording Script files

Before you can create your script file, you need to program all the memories and chases you want to use.

To enter script file programming mode, turn the key to "System", then press D [Script file programming].

The procedure for programming a script file is as follows:

1> *Press A [Select timer source], then A [External timecode] (MIDI) or D [Internal timer].*

2> *Press B [Record script file]. Start the timecode source if using MIDI. If using the internal timer, press A [Select timer source] then F [Start timer] to start it.*

3> *Run the show as you want it by turning playbacks on and off. The Pearl records your actions (including fade times) as script file commands. You must move faders to maximum for the action to be recorded.*

4> *Press F [Done] when finished.*

- By default the Pearl will record Script File 1. You can change this using option C [Select script file].

- Press D [Reset Timer] to set the timer back to zero. You can use this if you want the recording to start at zero; otherwise the timer runs before you are ready to start recording.

- You can use Time of Day as timecode by pressing C [Clock Timecode] from the select timer source menu. When recording for Time of Day playback, it's easiest to use Internal timer and set the internal timer to the real time you want to be recorded.

- At any point, pressing the ML Menu button will reset any playbacks which have been turned on by the script file and move the file back to the first step.

- Option E [Clear masters] will turn off any playbacks used by the script file.

- Ensure the master faders are at full when recording Script files

otherwise the playback faders will not be recorded.

11.1.2 What is recorded in the script file

The script file records two types of action:

When a playback fader is raised, the script file records
- The playback number, roller segment and roller page number
- The timecode setting when the fader starts to move
- The time taken for the playback fader to move from the trigger point to full.

When a playback fader is lowered, the script file records
- The playback number
- The timecode setting when the fader starts to move
- The time taken for the playback fader to move from full to the trigger point.

11.2 Playback

You can play back script files either from script file programming mode (with the key set to System), or from Run mode. Normally you will test the script file runs correctly after you've programmed it, but then switch to Run mode to actually use it.

11.2.1 Selecting a script file for testing

The Pearl can play and record script files numbered 1 to 99.

1>   If you are not in Script File Programming mode, turn the key to System and press D [Script file programming].

2>   From the script file menu press C [Select script file].

3>   Type the script file number on the numeric keypad, or use the up and down arrows to highlight the script file you want on the screen.

4>   Press Enter.

This will load the script file, but will not run it yet.

- Press F [Next Step] to select the current step in the file. The timer will change to match the timecode of the step.

- Press ML Menu to make step 1 the active step, and turn off any playbacks used by the script file.

11.2.2 Testing the script file

It's easiest to use the internal clock to test the script file, though you can also restart your external timecode source if you are using one. The internal clock produces the same type of timecode as the external (MIDI) timecode.

The display shows the next step to be run with an asterisk (*), and the live step is shown below the clock as "Live=XX".

1>   Press A [Select timer source]

2>   Press D, [Internal timer].

3>   If you are simulating an external timecode, type the start time

> *using the keypad. Or just press
> Enter to set the timer to zero.*
>
> *4> Press E [Connect Timer] to run the
> script file to the timecode.*
>
> *5> The timer will run and the script file
> will replay.*

- You can use Time of Day as timecode by pressing C [Clock Timecode] from the select timer source menu. This can be useful if the Pearl is running time-related lighting shows.

- You can jump to a step by typing the step number on the keypad and pressing Enter. If you are using the internal clock it will jump to the time for that step.

- When the script file is running, softkey E becomes [Disconnect Timer], which will stop the file running. Softkey F becomes [Synchronise] which will synchronise the script file to the current timer, skipping steps if necessary.

11.2.3 Using Script files in Run mode

When the Pearl is in Run mode, a special set of Script file options are available. You can run a script file and operate the console manually at the same time.

First you need to set the options for the script file.

D [Script file Functions] - Sets options for how the script file is run. The menu options are:

- A [Select timer source] - Selects external or internal timecode and starts or stops the internal timer (same as option A on the main Script File menu)
- C [Select script file] - Allows a script file to be selected (same as option C on the main Script File menu)
- D [Start from Step 1] - Resets the file to step 1, also resets the internal timer, if you are using it, to the Step 1 time.
- E [Connect timer] - Runs the script file. (Same as option E on the main Script File menu). This option changes to [Disconnect timer] when the script file is connected.
- F [Next Step] - Moves the script file on to the next step, and outputs the step. Also moves the internal timer on to the time for the next step. This option changes to [Synchronise] when a script file is running, which will skip any missed steps.
- G [Clear Script File Playbacks]. Turns off all playbacks which have been used by the script file.
  You can also press ML Menu to release the playbacks which have been used.

C [Play Script File] - Starts the currently selected Script file (selected using option D). The script file runs from its current position, so you may need to reset it to step 1 (see above). If you are using the

internal timer, the timer is started.

The option changes to [Pause Script file] when selected.

11.2.4 Looping and running script files on power up

The Pearl can be configured to run script files on power up, and to loop the script file (if using internal time code). This is useful for unattended operation in exhibitions.

In the Script file main menu, Press G [Script File parameters] to set these options.

Select the script file you want to change using the up and down arrows. The current script file is highlighted.

Option B [Toggle Loop mode] changes the Loop setting of the current script file. Loop resets the timer to zero when the file finishes (this only works when using the internal timer). The display shows "Ends" or "Cont" (continuous)

Option C [Toggle the script file autorun] changes the Autorun setting for the current script file. The Auto column will show "ON" when autorun is enabled. The Global Autorun setting, option A, must also be enabled for Autorun to work.

Option A [Toggle the Global Autorun] sets the global setting which enables or disables Autoruns. The top line of the display shows "Global Auto=" status.

11.3 Edit

Press D [Edit a script file].

You can edit each step of a script file to change the playback number, the timecode value for the step, and the fade in and out time. Timecode editing is described in the Timing section.

11.3.1 The script file edit display

The screen shows the steps in the script file. The current step is indicated with an arrow. You can change the current step using the up and down arrow buttons, or by typing the step number on the keypad.

As there isn't space to describe the step on the screen, a code is used:

C 1A 12 (Chase on Roller Page 1, roller segment A, playback 12)

M 1C 10 (Memory on Roller Page 1, roller segment C, playback 10)

R 10 (Ramp down (turn off) of playback 10. Page information is not given for ramp down steps)

The VDU screen, having more space, shows more detail of the steps.

11.3.2 Editing an action

This allows you to change the playback number, or to set a "ramp down" for a playback, or to change the fade in/out time.

Select the step to be edited using the up and down arrow keys, then press D [Assign Action]. The options are:

A [Load]: followed by the swop button of the playback to be loaded. Changes the step to a fade in of the playback you select.

B [Ramp Down]: followed by the swop button of the playback to turn off. Changes the step to a fade out of the playback you select.

C [Record a blackout step]: inserts a blackout. All playbacks under control of the script file are taken to zero.

D [Ramp Time]: sets the fade in/out time. Type the new time in seconds on the keypad and press Enter.

E [Theatre Stack GO]: sets this step to trigger the Go button on the theatre stack.

11.3.3 Inserting a step into the script file

Use the arrow keys to select the position for the new step.

Press B [Insert before step x] or C [Insert after step x] to insert the new step. The new step is blank, with no action or timecode.

Use the Assign Action and Assign Timecode options to set the action and timecode for the inserted step.

11.3.4 "On-the-fly" editing

Softkey F [On the fly editing] allows you to add new events to the file in real time as it plays back. (You can also add events to the file while it is paused, anything you do will be added at the current timer setting). The options on the menu are:

A [Select timer source] - same as option A on the main menu

C [Sort steps by timecode] - same as option C on the Assign Timecode menu

D [Play] - runs the file from the current time

E [Pause] - stops running the file

F [Start script file from step 1]

G [On the fly editing] - highlighted when this mode is active. Press to turn off on-the-fly editing.

11.4 Timing

Press D [Edit a script file] to amend timings.

11.4.1 Editing a timecode

Select the step to be edited using the up and down arrow keys, then press E [Assign timecode].

To enter a new timecode from the keypad, press C [Assign TC from

input], type in the new timecode value on the keypad and press D [Assign TC to step from input]. Timecode is displayed and entered as HH/MM/SS.FF (hours, minutes, seconds, frames – frames are $1/25^{th}$ of a second). The top line of the display shows you the timecode you are entering.

Alternatively, press D [Assign TC to step] to use the current timecode setting.

11.4.2 Changing timecode for a group of steps

If you want to offset the timing of a number of consecutive steps, you can allocate them to a group and change the start time of the group. The grouped steps will keep their timings relative to each other, but will all be offset.

You define the group like this:

1>   Press E [Assign Timecode]

2>   Use the up and down arrows to select the step to add to the group

3>   Press F [Toggle group] to add the step to the group. An arrow "<" will appear next to the step.

4>   Repeat from 2 to add other steps to the group

- All consecutive steps marked "<" are now part of a group.

- Also, other consecutive steps you haven't marked automatically become a different group. For example, if you've got a file with 30 steps and you mark steps 1-10 as a group, steps 11-30 will become another group.

A new timecode is assigned to the group like this:

1>   Use the up and down arrows to select a step in the group

2>   Press E [Assign TC from input], type the timecode where you want the first step in the group to run, and press C [Assign TC to group from input].

3>   Alternatively press C [Assign TC to group] to use the current timecode setting.

4>   All steps in the group will be offset to the new time, but will keep their relative timings.

You can also press A [Select a timer source] to select current timecode to be taken from external or internal clocks.

11.4.3 Changing the start timecode for the whole script file

In the Assign Timecode menu, Softkey B [Assign TC to file start] will set the current timecode as the new start time for the whole file. All steps in the script file will keep their relative timings. You can use this command with the timer stopped or running

To enter a start timecode on the keypad, press E [Assign TC from input], type in the timecode, then press B [Assign TC to File Start from input].

11.4.4 Sorting the steps into time order

When you have edited steps, the display may show the steps in the wrong order. Press E [Assign Timecode] then G [Sort by timecode] to re-order the display into the correct order. The functioning of the script

file is not affected.

11.5 Copy

11.5.1 Copying a script file

Press G [Script file parameters].

Select the script file to be copied using the up and down arrow keys. The current script file is highlighted.

Press the blue Photocopy button.

Type in a number for the newly copied script file.

Press Enter to confirm or exit to cancel.

11.6 Delete

11.6.1 Deleting a step

Press D [Edit a script file].

Select the step to be deleted using the up and down arrow keys, then press A [Delete Step].

Press F [Yes] to confirm.

11.6.2 Deleting a script file

Press G [Script file parameters].

Select the script file to be deleted using the up and down arrow keys. The current script file is highlighted.

Press the blue Delete button.

Press Enter to confirm or exit to cancel.

11.7 Options

The options on the Script File Menu are:

A [Select timer source] - Allows you to select the source for the timer on which the script file is based. The possibilities are:

- A - External (MIDI) time code.
- C - Clock Timecode - uses the Time of Day as the clock
- D - Internal timer /TC - uses the internal clock
- E - Stop timer - stops the internal clock
- F - Start timer - restarts the internal clock

You can enter a setting for the internal clock using the numeric keypad - 2 digits each for hours, minutes, seconds, frames - then press Enter. The time you are entering is shown at the bottom of the screen.

To reset the internal timer to 0, just press Enter.

B [Record script file] - This option lets you create a new script file as described in section 11.1.1. If there is already a script file, the Pearl will check you want to overwrite it (if not, select No and use option C below to work on another file).

C [Select script file] - Lets you select which script file you want to work on. The display shows a list of script files. Type the number of the one you want using the numeric keypad, from 01-99, then press Enter. To start with a new blank file, select any number which is not on the list.

D [Edit script file] - Allows you to edit the current file, described in detail in the Edit section on page 187.

E [Connect Timer] - Connects the timer to the script file. This will cause steps to be executed when the event timecode matches the timer. The option changes to Disconnect timer when selected, and option F changes to Synchronise.

F [Next Step] - Moves on to the next step in the script file. The timer is set to match the time of the step and the step is output. This option changes to Synchronise when the timer is connected to the script file; this allows the file to "catch up" with the timer by skipping events.

G [Script File parameters] - Lets you set options for how the script file is run. The display shows a list of the script files available, you can select the current file using the cursor arrows or by entering the script file number on the keypad. The menu options are:

- A [Toggle the Global Autorun] - Enables Autorun, any file with Autorun turned on using option C will run when the Pearl is turned on
- B [Toggle Loop mode] - Changes the Loop setting of the current script file. Loop resets the timer to zero when the file finishes. Only works with the internal timer.
- C [Toggle the script file autorun] - Changes the Autorun setting for the current script file. Global Autorun must also be On. The Auto column will show "ON" when autorun is enabled.
- D [Set end-time from input] - Allows you to set the end-time of the file from the numeric keypad
- E [Set end-time from script] - Sets the end-time to the last event in the file.

C H A P T E R   T W E L V E

12. Setup

This chapter contains: The user settings menu; Wipe modes; Disk functions

The Pearl is very easy to customise to your preferred way of working. The main options are contained in the "User settings menu".

12.1 User Settings

12.1.1 The User Settings menu

This menu is obtained by holding down the AVO button and pressing C [User Settings]. You can also turn the key to System mode and press C [User Settings].

You select the option to change using the cursor up/down buttons, and make the changes using the left/right buttons.

The options are:

1. **Normal Run / Take Over** - Sets the Run mode of the Pearl. This option can also be set by pressing Softkey A while in Run mode. See page 180 for details of Run mode.

2. **Rec by Fixture / Rec by channel** - Sets the recording mode of the Pearl. If set to "by Instrument", if any attributes of a fixture are changed, all attributes are recorded. If set to "by channel", only changed attributes are recorded. See page 147 for details of how this works. This option can also be set by holding the Avo button and pressing Softkey B.

3. **Speed=Seconds / BPM** - Allows you to set whether chase speed is displayed in Seconds or Beats Per Minute (tempo).

4. **Autoconnect Yes / No** - Allows you to turn Chase autoconnect on or off. If on, the controls are automatically connected to the most recently turned on chase. If off, you have to connect the chase manually using the Connect button.

5. **Palette page Off / On** - When set to on, 30 different palettes are available from the flash buttons on each fixture page (1-30 on Page 0--, 31-60 on Page 1--, 61-90 on Page 2-- and 91-120 on Page 3--). When set to Off, palettes 1-30 are on the flash buttons for all fixture pages.

6. **Q palette Off / On** - Enables the quick palette function which allows you to apply a palette to all fixtures if no fixtures are selected

7. **G-Tablet / Remote Control / DSR-20 Remote** - Specifies what device is connected to the serial port

8. **DMX Chans = xxx** - Sets the maximum number of DMX channels to transmit. If your rig does not use all 512 channels, you can improve the DMX refresh rate by reducing this number to the maximum of your rig. You can also set this option from the "Set DMX Lines" option in Patch mode.

9. Fader ON > x (vv) - Sets the level of the fader at which LTP channels turn on when fading in a memory or chase. X is the percentage value, vv is the raw DMX value

10. Fader OFF < x (vv) - Sets the level of the fader at which LTP channels turn off when fading out a memory or chase. This has to be at least 2 values below the "on" value. The Pearl will not let you set an incorrect value.

11. Grand Master OK / Broken - Allows you to disable (fix at full) the Grand Master fader should it happen to get broken by oiks being careless with the desk case lid.

12. TC Check On / Off – Turns MIDI timecode checking on or off. If turned on, the Pearl will sample the incoming timecode, and if it is corrupted will substitute internal timecode until the external timecode is OK again.

13. xxx mcS - Sets the DMX idle time (the delay between the end of one packet and the start of the next). This allows you to slow down the DMX refresh rate if you have some equipment that can't keep up. Increasing the delay will degrade the performance of the DMX link so you should not change this unless you have to. The figure in brackets shows the DMX refresh rate in milliseconds.

14. Midi - SLAVE/MASTER/DISABLED/Visualiser - Sets the MIDI mode of the Pearl. In Slave mode it receives data, in Master mode it transmits data when you press a key or raise a fader. This provides a simple way of recording a show straight into a sequencer.

15. Midi channel = xx - Sets the MIDI transmit / receive channel. MIDI channels are actually numbered 1-16, and the Pearl displays 0-15, so add 1 to the Pearl display to get the actual channel.

16. Use 720K / 1.4Mb disks – Sets which type of disk the Pearl expects. The Pearl uses this setting to work out if your show will fit on a single disk, or if it needs to span multiple disks.

There are also options on the softkeys, these are:

A [Fixtures or Mimics] – The Swop button LEDs can show either the fixture intensity (Mimic) or light up if the fixture is selected (Fixtures). This option can also be set by holding the Avo button and pressing Softkey A

B [Set TC valid range] – Allows you to set the MIDI timecode range which will be accepted. Enter the minimum time as prompted on the screen and press softkey A, or the maximum time and press softkey B.

C [Specify Attributes for Bank] - Allows you to set which attributes go together (also called the Focus Mask, see page 138 for another way of setting this). Normally the Dimmer attribute includes all the others, and the Colour attribute includes the cyan/magenta/yellow attributes, but you can change this. Select the Attribute to change, then press this option. Select the other attributes you want to include, then press Exit. Beware of changing these settings unless you are sure what you are doing.

G [Default settings] - sets all settings back to the defaults.

12.1.2 Setting the Wheel acceleration

The control wheels allow you to set 16-bit control values to the fixtures, and have an acceleration function so you don't have to spin the wheel for hours if you need to make large changes to the fixtures.

Hold down the AVO button and press the 2 button to set the different wheel acceleration curves. The current curve is shown on the main part of the screen. "Linear Fast" has the fastest response and "Linear Slow" the slowest and most accurate.

12.2 User functions

12.2.1 The Wipe menu

This menu is obtained by turning the key to System mode and then pressing A [Service]. Softkey F [Wipe] then selects the Wipe menu.

You can selectively wipe various parts of the console, or you can wipe the whole thing. Press softkeys B, C and D to turn the wipe options on and off. The option is highlighted when that wipe option is turned on.

The options are:

A [Cancel] - quits Wipe mode

B [Patch] - Sets the Patching to be wiped. The programming and individual Palettes will also be wiped (as they would mean nothing without the patch), however shared palettes (see page 135) will remain.

C [Palettes]- Sets the Palettes (including shared palettes) to be wiped.

D [Programming] - Sets the memories, chases and theatre stack to be erased. The Patch and palettes (shared and individual) will remain.

F [Wipeall] - Will wipe the whole memory, setting the console back to factory default state. The settings of the B, C and D options are ignored.

G [OK] - Will wipe the memory as set by options B, C and D.

12.2.2 Disk functions

Press the Disk button to display the disk menu. The options are:

A [Load show from disk] - The Pearl displays the name of the show on the disk. This is shown on the VDU screen only. Press Enter to load it or Exit to cancel.

B [Save show to disk] - Saves the contents of the console to the disk. Type a name for the show, then press Enter. The Pearl will ask if you want to make the show compatible with Sep 2000 software. Press softkey B for No or A for Yes (Sound to light options will be lost if you select Yes).

C [Verify disk] – Compares the show on the disk to the contents of the Pearl.

D [Format options] - Allows you to format a disk to 720K or 1.44M,

then optionally save a show when the format is complete. This is also a handy way to wipe a disk if you don't have a blank disk with you.

E [Catalogue] – Displays (on the VDU screen) the show file on the disk.

F [Import Chase] – You can import a matrix chase created on an external PC application using this feature. To import a chase, insert the disk containing the chase you wish to import and select this option.

G [Load visualiser CSV file] – You can load a CSV file from Avolites Visualiser which contains the patch information from the Visualiser setup, which will patch the console to match the Visualiser.

C H A P T E R   T H I R T E E N

13. Other features

This chapter contains:Setting the Pearl's clock & other utility functions; using MIDI commands with the Pearl; Service mode; hardware WIPEALL mode.

13.1 System Configuration

13.1.1 Utility menu

The Utility menu is accessed by turning the key to System, then pressing G [Utilities].

A [Set clock] - The Pearl has a built-in real time clock. It uses this to record snapshot times and disk backups, so it's important to have the correct time and date set on it.

To set the clock you need to be in System mode, and you need to have a VDU screen connected.

Press A [Set Clock]. The Pearl displays a window on the VDU screen in which you can enter the time, date and daylight saving modes (if the clocks get put forward an hour in summer). Press Exit to abandon or Enter to save.

C [Configure a MIDI keyboard] - Lets you change which MIDI note turns on each memory. Send the MIDI note for memory 1, then the note for memory 2, and so on. A prompt is displayed on the VDU screen which tells you what the Pearl is expecting you to do. Press Exit to end.

D [Cache personality file] - Lets you load the personality files into the Pearl, so you don't need to carry a personality disk around with you. You need the special compressed personality file called P2000PER.CMP which is available from the Avolites web site. If you have created your own personality cache (see page 206) you use this option to load it.

E [Load shape file] - Allows you to load a new shape definition file SG.DAT. You may need to do this if Avolites issue an updated shape file.

F [Clear Wrap around channels] - If you load a show saved with an earlier version of software, you might get a problem with channels which wrap around from 255 to 0. Running this option will sort them out.

G [Update personality] - Allows you to load an updated version of the personality file for the fixtures you currently have patched. This is useful if Avolites release an updated version of the personality, for example adding Range Tables. The softkeys display a list of the fixtures you have patched.

13.1.2 Service mode

Service mode, selected by turning the key to "System" then pressing A [Service], lets you make fundamental changes to the console, including

changing the operating software.

Do make sure you have plenty of time to complete these operations. Do not attempt to upgrade the operating system or make other fundamental changes just before showtime!

A [Run AVOS2] - AVOS2 is the low-level operating system of the console. While AVOS2 is running, you can update the main operating software in the console. See next section for AVOS2 functions.

B [Diagnostic Screen] - Displays a diagnostic screen which enables you to test the buttons, faders and wheels on the console. Press the Up arrow or turn the key back to Run mode to get out of Diagnostic mode.

The top line of the display shows the Master Fader levels.

Below that are the settings of the Playback Swop buttons, Flash buttons and faders.

Below that are the preset fader flash/swop buttons and the fader levels themselves.

Whl1 and Whl2 give an incremental count from the wheels.

Timer and DMX show a count of internal timer ticks and DMX packets sent.

DOM_resets indicates if resets of the DMX Output Module have occurred; this is normally caused by the TMS micro becoming loose in its socket. Try pushing it back into the socket.

Key shows key press and release codes for the buttons. X and Y show graphics tablet pen coordinates.

XTAL=Good shows if the MIDI oscillator is running. On early motherboards a modification was required.

C [Display Bus Errors] - A Bus error is generated when either the software or hardware malfunctions. Up to 20 bus errors are logged. Press ENTER while viewing the Bus errors to clear the list. The Bus error Type and the Program counter value at the time of the Bus Error are stored in the log. Should the Bus error have been caused by a Software fault, then this information can be used the pinpoint the precise location of the fault.

If a bus error has been logged then the letter 'E' appears on the main LCD display positioned somewhere to the top left of the Chase Window.

Most Bus errors are caused by a faulty or incorrectly inserted VDU card. As a general rule, if a Bus error occurs, check that all the Chips on the Borris motherboard are properly seated.

The correct procedure to follow after a Bus error has occurred is to send the bus error log to softwareteam@avolites.com together with a brief description of events just before the Bus error and if possible the show files and the key log (see D [Tests] → E [View Key History]

D [Tests] - Displays another menu allowing you to test various hardware in the system.

B [Read FIX.SYS] allows a user dimmer curve to be loaded
C [Modify memory] for Avolites tech support use only

D [Memory Check] runs a test on the system memory

E [View Key History] shows a list of keypresses on the VDU screen. (Press E again to close the list)

F [View MIDI codes] shows incoming MIDI commands on the VDU screen (press F again to close the window)

G [MIDI test] sends out MIDI data to test the ports

F [Wipe] - Allows you to wipe various parts of the console. This option is described in detail on page 194.

13.1.3 AVOS2 functions

AVOS2 is the low-level operating system of the console. While AVOS2 is running, you can update the main operating software in the console.

If you have any information in the console, you should save it to disk before running AVOS. You will need to enter a code to discourage anyone who gets here by accident, the code is 68340.The options are:

A. Start the system - restarts the Pearl operating system and returns the console to normal.

B. Burn a new program - Loads new console operating software. This procedure is described in detail in the next section.

C. Verify - checks if the operating system on the disk matches the one loaded on the Pearl.

D. Save program - saves the existing operating system to disk

E. AVOS extender - lets you load a new AVOS operating system (RAM.PRL). You must ensure the console is not turned off while you are doing this, because you will need new flash memory chips from Avolites if this happens.

F. Renew license

1. Wipeall and start system - Executes a Wipeall (clears everything) then runs the Pearl operating system

2. Disk to memory burn program

13.1.4 Upgrading the Pearl's internal software

From time to time, Avolites make updated software available on the website. The new software may add new features and fix any problems found with the console. The Avolites website has detailed instructions on how to get the software from the website onto a disk for the console.

You can load new software from the floppy disk drive using the following procedure.

1>   Turn the key to "System".

2>   Press A [Service], then again A [Run AVOS2].

3>   Enter the password which is 68340 and press Enter. (This is the number of the main processor, if you forget it you can remind yourself by opening the console and looking at the top of the main processor chip)

4>   Insert the software disk into the disk drive

5>   Press B [Burn a new program], then press Enter.

6>   Wait until "100% completed" appears, then press Exit. If the message "Failed" appears or the system halts for a long time

> *before 100% is reached, the disk is probably faulty. Download the software again onto another disk and try again.*

> 7> *Press 1 [Wipeall and start system] followed by Enter to restart the main program. Do not use A [Start system] as the new software may not be compatible with the data stored internally in the memory.*

- The show in the Pearl will be lost during the upgrade. Save the show before upgrading, and reload it afterwards, if you want to keep it.

- You can also enter AVOS mode by holding down the 21 and 30 Flash buttons while powering up the Pearl.

13.1.5 Hardware WIPEALL mode

You can do a complete factory reset by fitting a link on the board. You should obviously save any show data that you want to keep. It may also be advisable to have a backup of the system software (AVOS option D) before you do this… just in case.

1> *Disconnect the Pearl from the mains.*

2> *Undo the half-turn fasteners on the rear edge of the console, and lift the fader section of the console.*

3> *Fit the Wipeall link. On Borris 3 motherboards this is at the bottom right of the board near the 4-digit display. On older motherboards it is located on the main PCB near the large square processor. It's labelled on the PCB legend. A link is provided fitted to one of the pins. Fit the link so it connects the two pins.*

4> *Close the console (don't fasten it), then turn on the power.*

5> *The console will power up in the AVOS menu. Select option A "Start the System". (do not select any other option when the Wipeall link is fitted).*

6> *Turn off the Pearl, open it and remove the Wipeall link (fit to one of the pins only). If you forget this, the console will do a Wipeall every time you turn it on!*

7> *Close the console and refasten it.*

If you do the above then restart the console without selecting "Start the System", you may not be able to get the console to run. Use the following procedure to start the console. This procedure is also another way to get into AVOS mode.

1> *Turn off the console and open as described above.*

2> *Fit the AVOS link. On Borris 3 motherboards this is in the bottom right corner by the 4-digit display. On earlier boards it is located near the chip labelled "PASHA". It is in a row of 8 jumpers, the AVOS link is the one nearest the back of the console. A link is provided fitted to one of the pins. Fit the link so it connects the two pins.*

3> *Close the console (don't fasten it), then turn on the power.*

4> *The console will power up in the AVOS menu.*

5> *Select A [Start the system]. Do not select any other option.*

6> *Turn off the Pearl, open it and remove the AVOS link (fit to one of the pins only).*

7> Close the console and refasten it.

The location of the links on the motherboards are shown below.

Borris 3 motherboard   Audio gain links

Wipeall and
AVOS links

Borris 2 motherboard   Audio gain links

AVOS link   Wipeall link
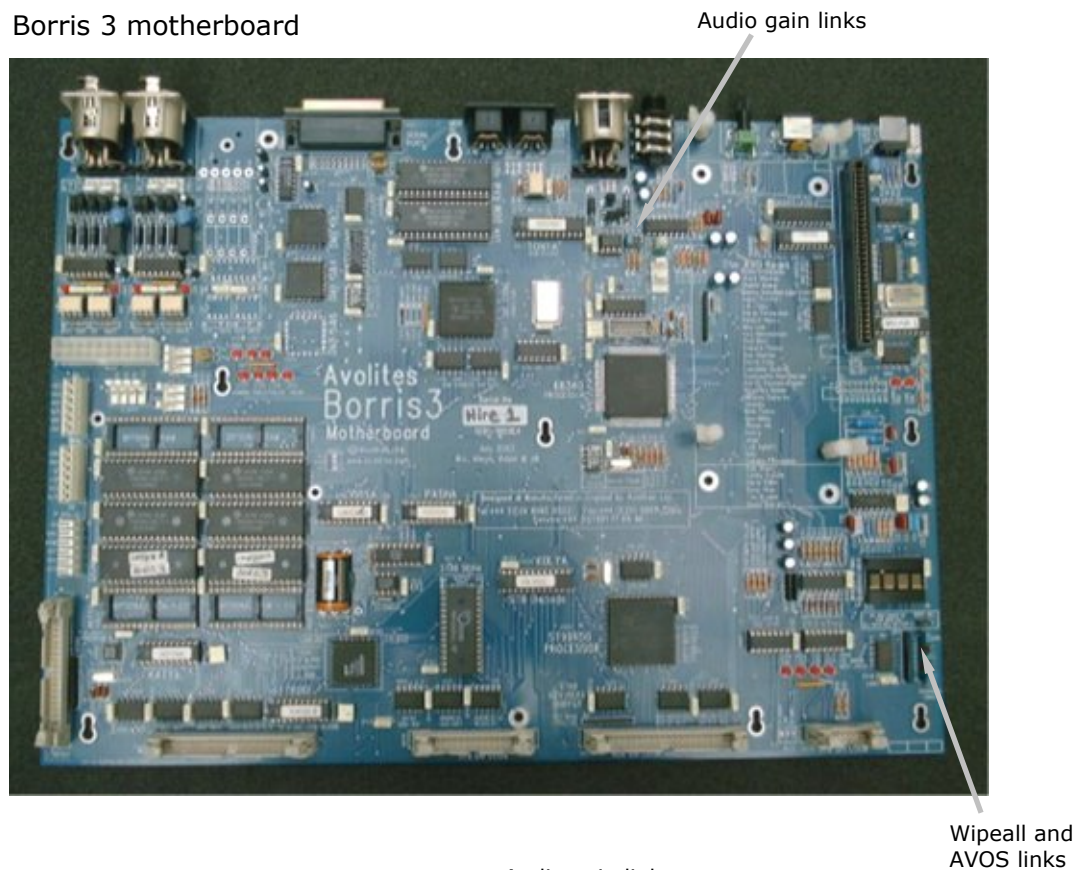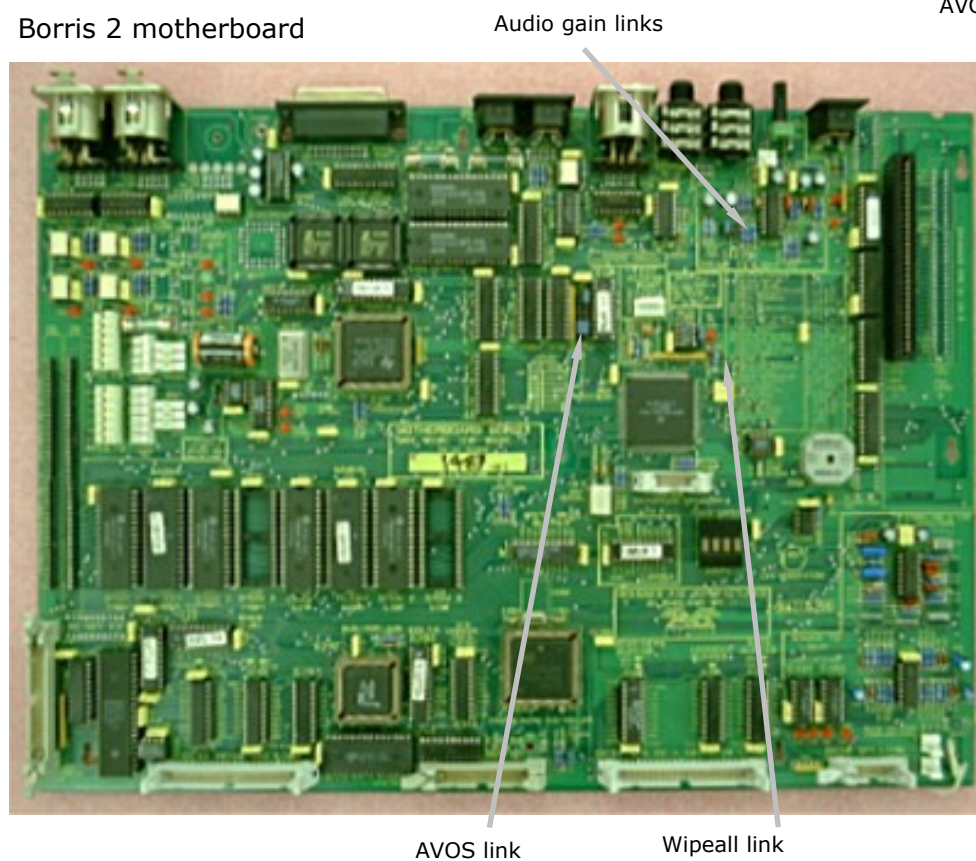
13.1.6 Audio gain links

You can change the sensitivity range of the audio input using the Preset Gain Links.

The links are located near the audio connector. On the Borris 3 motherboard they are labelled L14, L15, L16. Link L16 for 0dB, L15 for 20dB and L14 for 40dB

On older motherboards they are labelled "Preset Gain Links" and the gain for each link is printed on the board.

The link should normally be set to 0dB for speaker level, 20dB for line level input, 40dB for a microphone level input.

13.2 MIDI functions

The Pearl can respond to or output MIDI note information which emulates certain buttons being pressed or faders being moved. The console can also respond to MIDI Timecode, which is used with script files.

If you want to know more about MIDI, a good book to read is *MIDI Systems and Control* by Francis Rumsey; Published by Focal Press, ISBN 0-240-513000-2. There's also a huge amount of information available on the Internet, try searching for "MIDI specification".

The MIDI mode is set on the User Settings menu to be MIDI master (outputs MIDI when you turn on playbacks), MIDI slave (responds to MIDI) or MIDI disabled. The MIDI channel the Pearl will respond to is also set on this menu (note that you need to add 1 to the number displayed by the Pearl to get the actual MIDI channel number).

13.2.1 What a MIDI command looks like

The normal MIDI command is: STATUS BYTE1 BYTE2

Or in binary, `1cccnnnn 0xxxxxxx 0yyyyyyy`

`ccc`   =   the MIDI command (note on, program change etc)

`nnnn`   =   the MIDI channel number (set on the User Settings menu).

`xxxxxxx` and `yyyyyyy` are the data bytes.

MIDI often works in "running status" mode. If a lot of the same type of command is being sent (lots of note on's etc.) then the status byte can be missed out. The receiver knows that if it doesn't get a status byte, it just has to run with the last one it received.

13.2.2 MIDI commands used by the Pearl

The Pearl uses standard MIDI commands. The usual name for these is given in *italics.* All commands are given in hexadecimal notation ($9n), where 'n' is the MIDI channel number. So a note on command for MIDI channel 3 for example would be $92.

Set playback page : *program change* `($Cn xx)`

Page	1	2	3	4	5	…	28	29	30
xx	$00	$01	$02	$03	$04	…	$1B	$1C	$1D

example $Cn $02   *Console changes to Page 3*

Turn on a playback: *note on* ($9n pp ll)

Note number (pp) = playback number, from 0 - 14 (decimal)
Key velocity (ll) = playback level, from 0 - 127 (decimal). 127=Full

example $9n $03 $40   *Playback Fader 4 at 50% level.*

(Note that Playback Fader numbers start at zero, so subtract one from the number on the console to get the MIDI note number).

To Turn Off a playback, send a note on command with velocity=0. The Pearl does not recognise MIDI note off ($8n) commands.

Stop/run/step a chase etc: *after touch* ($An pp cc)

Note number (pp) = playback number, from 0 - 19 (decimal)
Aftertouch value (cc) = control codes:
    $00   stop chase
    $01   run chase
    $02   restart from step 1
    $03   fade to next step using programmed fade times
    $04   Snap directly to next step

13.2.3 MIDI Time Code

MIDI time code is used to synchronise Script Files with an external music track.

Quarter-frame message types are fully supported and these follow the standard format, which can be found in most MIDI handbooks. A suitable EBU/LTC Timecode to Midi Timecode converter is manufactured by JC Cooper Electronics whose address is 12500 Beatrice Street, Los Angeles CA 90066 USA, or through Avolites UK.

13.2.4 MIDI Problems

The console supports a full MIDI data rate burst for 2 seconds, after that data may be lost since it cannot be processed.

A MIDI debug Terminal is available which shows you the MIDI commands being received by the Pearl. To activate this :

Turn the key to System, then Press Softkeys A, D, F. The MIDI terminal window is displayed on the VDU screen. Turn the key to Run to finish.

13.3   The stage remote (riggers remote)

The Pearl can be used with the optional Avolites Stage Remote. This is a small hand-held controller which connects to the console by a 25 pin serial cable. The cable can be connected either way round and can be plugged and unplugged at any time. The remote is useful when setting up a show as you can leave the console at the back of the venue and use the Stage Remote to operate it from the stage.

- To set up the stage remote, set the console to Program mode. On the User Settings menu, set option 7 to "Remote Control" (hold down AVO and press Softkey C to display the User Settings menu). Plug in the remote. Press the blank white key on the bottom left hand corner of the remote, the LEDs should flash. Press Exit, then 111. The LEDs should flash again to say the remote is enabled.

- To set a DMX channel to a particular value, press DIM, type the DMX channel number, press AT%, then 1-9 to set the level or AT% again to set full. For example, DIM 1 5 AT% AT% sets channel 15 to full.

- You can access the 4 DMX lines using the following numbers:
  Line A - Channels 1-512
  Line B - Channels 513-1024
  Line C - Channels 1025 - 1536
  Line D - Channels 1537 - 2048

- The NEXT and LAST buttons turn on the channel after or the channel before the one you just entered, at the last level you entered. Other channels are turned off.

- You can use THRU to turn on a range of channels, for example 2 1 THRU 1 0 0 AT% 5 would turn on channels 21 to 100 at 50%.

- You can use the AND button to make up a list of channels to turn on. For example, 2 1 THRU 3 0 AND 4 1 THRU 5 0 AT% 5 would turn on channels 21-30 and 41-50 at 50%.

- Pressing INSTD sets all channels to 0.

- Recall a memory/chase by pressing MEM, then the playback number, then AT%. The playback number is the button number on the console, +15 if it's on page B, +30 for page C, +45 for page D, etc. Memories/chases are always turned on at 100%.

- For a chase you can use the + and - buttons to step forwards and backwards. You can use this to focus lights if you program a chase with one light on in each step.

- To disable the remote, press EXIT then 0 0 0.

- You can check if the remote is enabled or not by pressing the blank button on the bottom left. If the LEDs flash once the remote is disabled, if they flash twice it is enabled.

CHAPTER FOURTEEN

14. The Personality File System

If you can't find the personality for the fixture you're using, or you want to know how to create a personality file, this section has the details.

14.1 Help, I can't find a personality for my fixture

Avolites has a large library of fixtures on the website at http://www.avolitesdownload.com/Personality%20Library/Default.asp which can be downloaded quickly onto floppy disk.

You can also use this page to request a personality for a fixture if one doesn't already exist, and to report problems with personalities.

If you frequently use a fixture which isn't in the Pearl's internal fixture cache, you can build it into the cache so you don't have to mess with floppy disks. To do this you need to download the Avolites Cache Builder from http://www.avolitesdownload.com. You then need to load your new cache file as described on page 196.

14.2 Create

14.2.1 What is and how do I write or change a Personality file?

The personality file is an ASCII text format file containing information on how the desk should patch each channel of an instrument.

Since the files are in ASCII text format you can easily modify them and create new versions for your own use. When editing files you must ensure your word processor is set to save in plain ASCII text format. If you use Windows Write make sure that when you open the file you select 'no conversion' and when you close the file you save it in the 'text file' format.

Before editing make a backup of the original, in case your edits do not work.

The Pearl normally stores the personality files in an internal cache so that you don't need to carry a personality disk around. The personality cache is a special compressed file containing all the personalities. You cannot currently add your own definitions to it, so you will have to load your custom personalities from disk in the time-honoured fashion.

14.2.2 Personality file naming conventions

There are four extensions used by personality files: .PER, .D2, .R96 and .R20.

Pearl software will read any .PER file and any.R96 file, however when .PER files are read a message will be presented to the user to warn that an old personality file is being used and not every function of the desk will work correctly. Typically this includes tracking, pre-loaded focuses locate fixture and tablet functions. .D2 files are for the Diamond II & Diamond III.

Files with the extension .R20 can only be used with Sapphire 2000, Azure 2000 and Pearl 2000/2004 control desks. These files have

additional fields for the enhanced functionality provided within these desks.

14.2.3 Personality File Keyword Order

Keywords should appear in the following order:-

```
DEVICE ...
TYPE ...
DEVICEADDRESS ...
DAEND ...
MINDMX ...
MAXDMX ...
DIVBY ...
MIRROR ...
DMX ...
DMX ...
TEXT  ...
END
PFTABLE ...
PFEND
MACRO ...
MEND
```

14.2.4 The Instrument Name

The **INSTRUMENT NAME** will appear in the following format :-

```
DEVICE   XXXXXXXX
```

Where **DEVICE** is the keyword to tell the desk that an instrument name follows and `"XXXXXXX"`   is the name of the instrument, this name can be 11 characters long and no spaces or tabs are allowed.

This instrument name will appear on a soft button when patching and is used in various view screens when operating the desk.

It is usually easier to make the actual file name similar to the **DEVICE NAME** to make things easier when servicing personality files.

14.2.5 The Device Type

The **DEVICE TYPE** will appear in the following format :-

```
TYPE  1 Y Z
```

Where **TYPE** is the keyword used to tell the desk that **DEVICE TYPE** data follows.

`"1"`, which is the first character on the line is no longer used but is required for backward compatibility. This field may be used in future versions and should always be "1".

Field `"Y"` tells the desk the number of ATTRIBUTES (channels) the device uses, and entry `"Z"` gives information on the way the device is to be patched.

Where:-

> `M`   patches from dmx 512 to 001 (downwards)
> `D`   patches from dmx 001 to 512 (upwards)
> `K`   for those devices where the dmx channels used are not in consecutive slots

For example a **TYPE-LINE** can look like:-

```
TYPE  1 8 M
```

Setting the device to:- 8 channels used patched from 512 downwards and the next line sets a device for 10 channels and patched from 001 to 512

```
TYPE  1 10 D
```

14.2.6 Fixture switch settings

This allows the desk to display the exact switch settings required to configure a fixture for a given DMX address and to ensure it is set in the correct mode.

The display can be configured in virtually any way required. The fixture switch detail MUST be declared before the DMX declaration.

A number of variables are provided for use within this function, these must be in lower case:-

    d = dmx number the instrument is assigned to
    h = handle the instrument will be operated from
    n = the device name, given earlier in the personality file
The keywords associated with the fixture switch settings are:

    DEVICEADDRESS
    DAEND
    MINDMX
    MAXDMX
    DIVBY
The screen space allowed for displaying the fixture information is 10 lines by 21 characters.

The start and end of the fixture switch detail is marked by DEVICEADDRESS and DAEND.

The formula to display this information is restricted to 10 lines by 79 characters.

The three other variables must be defined for the instrument are:-

- MINDMX = lowest DMX number the instrument can be addressed

- MAXDMX = highest DMX address number the instrument

- DIVBY = The difference of two dmx addresses selected by changing the LS bit of the address switch.

For example if the instrument address switch increments the DMX number by 1 then the difference DIVBY will be 1, if, like on the Cyberlight it increments by 20 then DIVBY would be 20.

DIVBY is used to ensure that an instrument can be addressed at the address proposed by the user when patching.

There follows an example for a Cyberlight.

```
;This instrument can only be switched to certain DMX addresses.
; variables used d=dmx number, h=handle, n=devicename;
"Address    %04b %1b001"16-(d/20%16),(d/20)/16
; This is the address display line
; 1. Items in quotes are displayed
; 2. First item here (Address    ) is ascii text
; 3. %04b = 4 bits of binary data, 0 means display leading 0's
; 4. next is a space
; 5. %1b = 1 bit of binary data
```

```
; 6. 001 is ascii text again
; 7. Close quotes
; 8. first variable passed is 16-((d/20)%16)
;      (d/20)  : dmx/20 giving fixture number
;      %16     : isolates lower 4 bits
;      16-     : reverses the 4 bits
; 9. Second variable passed is  (d/20)/16
;      (d/20)  : dmx/20 giving the fixture number
;      /16     : isolates the upper 4 bits.
;DEVICEADDRESS
"Handle  %2d"h
"Fixture %11s"n
"DMX     %03d"d
""
"Dip Switch  1234 5678"
"Personality 0000 0000"
"Address    %b%b%b%b %b001"d/20%2,d/40%2,d/80%2,d/160%2,d/320%2
""
"0=OFF ( Right )"
"1=ON  ( Left  )"
DAEND
MINDMX=1
MAXDMX=481
DIVBY=20
```

The next example is for a Colour Fader, This instrument uses a GROUP and ADDRESS switch

```
; Upto 10 lines of 79 chars are allowed including formulae
; variables used d=dmx number, h=handle, n=devicename;
"Address    %04b %1b001"16-(d/20%16),(d/20)/16
; This is the address display line
; 1. Items in quotes are displayed
; 2. First item here (Address    ) is ascii text
; 3. %04b = 4 bits of binary data, 0 means dislay leading 0's
; 4. next is a space
; 5. %1b = 1 bit of binary data
; 6. 001 is ascii text again
; 7. Close quotes
; 8. first variable passed is 16-((d/20)%16)
;      (d/20)  : dmx/20 giving fixture number
;      %16     : isolates lower 4 bits
;      16-     : reverses the 4 bits
; 9. Second variable passed is  (d/20)/16
;      (d/20)  : dmx/20 giving the fixture number
;      /16     : isolates the upper 4 bits.
;
DEVICEADDRESS
"Handle  %2d"h
"Fixture %11s"n
"DMX     %03d"d
""
"GROUP   %2d"d/12+1
"CHANNEL %2d"d%12
""
""
""
DAEND

MINDMX=1
MAXDMX=508
DIVBY=3
```

14.2.7 Mirror

Mirror is used to define the instrument type - Moving head or Moving mirror and the maximum Pan and Tilt angles through which the instrument can move. These values are required for the 3D tracking system. Typically a **MIRROR** line looks like:-

```
MIRROR  1 170 110
```

Where:-

MIRROR is the keyword

> **1** indicates moving mirror a **2** in this field indicates a moving head instrument.
> **170** is the maximum pan movement.
> **110** is the maximum tilt movement.

14.2.8 The DMX/Preset Layout

The **DMX/PRESET LAYOUT** will appear in the following format:-

```
DMX
A B C D E F G H I J K L ; comment
A B C D E F G H I J K L; comment
END
```

Where **DMX** is the keyword to tell the desk dmx, preset and fader information follows.

A: sets which Attribute button will be connected to the DMX channel, defined later. The range is 1 to 20 for the desk, but up to 15 for the tablet.

A 0 (zero) in this field indicates it is part of a 16 bit channel defined in the previous line.

B: This tells the desk which wheel is used for that channel, where 1 means left and 61 right.

C: This is the channel type, currently there are 5 different channel types available :-

> H   (HTP) for dimmer
>
> L   (LTP) for moving lights and scrollers
>
> I   (instant)   LTP channel which does not fade
>
> S   (double byte) 16 bit LTP channel which does not fade
>
> s   (double byte) 16 bit LTP channel

D: This is the relative DMX address of the attribute being defined, starting from 1.

E: This is the maximum output of that attribute in %, where 0 means no output at all and 100% full output. This allows the channel to be limited in level.

F: This sets the curve for that channel, DOM version 2.xx and up supports 4 different curves :-

> 1 = linear curve
> 2 = square
> 3 = relay at 50%(128) on
> 4 = FD square

The curve number is prefixed a single letter which can be:-

> N = normal
> C = complemented curve (ie invert the channel)

G: This is the link to the user tables and identifier for PAN and TILT. This will be explained in the **TABLES** section. This entry can run from A to F and 0 (zero) meaning no table entry.

H: This must always be 1 (The checksum facility has been removed).

I: This defines the channel name. This should be in inverted commas and can be up to 11 characters long and it may include spaces. This will be used on screen to identify the channel.

J , K and **L:** define three default levels that can be output. These are Locate fixture, Highlight and Lowlight.

The range is 0..255 and -1 means no change to the output.

Locate Fixture is used in the moving light menu to turn on a fixture and set channels to a level such that you can see where the instrument is. Generally the settings give 50% pan 50% tilt, white, no gobo, 100% dimmer.

Highlight and Lowlight are used when editing to brighten or otherwise mark one instrument whilst the others are turned into a dim state.

14.2.9 Text Field

The text field will be displayed when patching the devices.

This text field can hold any text you like, but generally it displays the Attribute Bank layout of the device being patched.

If you are going to want to use the personalities on other Avolites consoles, bear in mind that different consoles have different sized displays. Limit the text to 20 characters a line if you want the personality to be compatible.

14.2.10 The Preset Focus (Palette) table

Tables on the Pearl are for default Palettes which are automatically loaded when an instrument is patched.

Two key lines are required for tables, the definition line and the data line.

The definition line looks like:-

```
PFTABLE  "table name"  A B..
```
Where A is allows the table to be connected to a tablet attribute button.

With the instrument when the pen is clicked on the tablet the table list appears on the VDU screen, moving the pen up or down allows selection of a table entry.

The range for this is -1 meaning table is not attached to a tablet button or 1..30 to define which button the table will be attached to.

Where B is the list of dmx channels values which will be defined within the table.

For example:-

```
PFTABLE "GOBO" 3 4 7
```
The first word is the keyword `PFTABLE` to indicate that a preset focus table follows.

Next follows the table name. This can be up to 11 characters and can include spaces. It must begin and end with double quotes.

The first number indicates which tablet attribute button the table will be available on.

The final numbers are the actual DMX channel numbers.

The next lines contain the actual focus information and is defined as follows:-

```
"focus name"  palette entry number  channel level(s)
```
When `"focus name"` this is the name given to the focus. This can be up to 11 characters and can include spaces. It must begin and end with double quotes.

When `focus button number` defines which palette entry will be used, numbers 1..200 indicate the entry button number.

Where `channel level(s)` are the actual level output to the instrument. This is must be in hexadecimal notation. If no value is required (the entry is OFF) a -1 (minus one) should be placed in the field.

For example:-

```
"STAR GOBO" 20 0 FF ;
```

The first field is the name of the focus, STAR GOBO.

Next is the focus button number that the focus will be placed on. In this case focus button 20.

Next are the data values.

The last line of the preset focus table must be:-

```
PFEND
```
There can be a number of preset focus tables.

14.2.11 Macros

Macros allow a defined set of channels to be adjusted rather like running a chase. The principle use for this is to allow instruments to be struck up or reset which sometimes requires a sequence of channels to be turned on and off over a certain time scale.

> Whilst a macro is running all other desk functions are locked out. The macro progression is presented on the prompt line of the screen.

There are three key types of data line associated with macros, these are:

```
MACRO "macro name" channel list
"data" data list
"delay" 1 time
MEND
```

- Where `"macro name"` can be up to 11 characters and can include spaces. It must begin and end with double quotes.

- The channel list is the DMX channels for the instrument, to which data will be passed from the `data list`.

- `"data"` that the following data will be passed to the instrument. Note that this MUST be in lower case and enclosed in double quotes.

- `data list` is the data to be passed to the instrument. It must be in hexadecimal notation..

- `"delay"` This optional statement defines that a delay time before

running the next step. When used it must be followed by a 1. This field is for future use.

- `Time` is the delay time in units of 0.1 seconds and is in hexadecimal.

    3 seconds would be 2E

Macros must terminate with the statement `MEND`

A typical example macro is:-

```
MACRO "HOME" 1 18 20 ; send instrument to home position

"data" 0 FF 0
"delay" 1 20
"data" 0 0 FF
"delay" 1 20 ; wait about 2.5 seconds
"data" 0 0 40
"delay" 1 40 ; wait about 5 seconds
"data" 0 0 0
MEND
```

14.2.12 Range tables

Range tables give names to the attribute values; for example on the shutter channel, 0-7 is "closed", 8-119 is "strobe". This information is displayed above the control wheels when Intelligent Attribute Display is enabled.

The definition line looks like:-

```
    RANGE  attribute number
```
And each entry in the table:

```
    Low DMX value  HIGH DMX value TEXT
```
"Low" is the bottom of the range, "High" is the top of the range, both inclusive figures.

Variables can be used in the TEXT field to display numbers; a is the low value, b is the high value and c is the actual DMX value.

```
;--------------------------------------------------------
; Range Tables
; Column by column description...
; 1. Low DMX value (inclusive)
; 2. High DMX value (inclusive)
; 3. Displayed text (max 11 chars)
; Variables used a=low val, b=high val, c=DMX val

RANGE 8  ;Shutter
0   7    "Closed"
8   119  "Strobe %3d%%"0+(((c-a)*100)/(b-a))
120 136  "Flash Beat"
137 153  "Flash Music"
134 170  "BO Gobo"
171 187  "BO Colour"
188 204  "BO Col+Gobo"
205 221  "Slow Gobo"
222 255  "Open"
REND
```

14.2.13 Example Personality File for the High End Cyberlight

Items in BOLD are required, everything else is comments which can be freely changed deleted etc. comments always precede a ;.

```
; "High End Cyberlight mode 1", 20 DMX channels, filename :hecyber1.per
;
;   Date       By         Description
;   26-05-94   Salzedo    created
;   10-08-94   Anwar      revised dmx slots
;   07-09-94   J.B.Toby   revised for Pearl use/relocation of channels
;   11-11-94   J.B.Toby   revised to match PerManML
;   22-05-96   S. Anwar   Pan/Tilt channel identification & Resolution inserted
;   04-03-96   S. Anwar   Revised for Pearl 96
;-----------------------------------------------------------------------------
; The device name, upto 11 characters, no spaces are allowed
DEVICE  CYBER_mode1
;
;-----------------------------------------------------------------------------
; The Type of instrument, 1 & M are required for backward compatibility
; The middle number denotes the number of DMX channels used
TYPE  1  20  M
;
;-----------------------------------------------------------------------------
; Mirror/Head resolution
MIRROR       1        170       108
;            |         |         |
;            |         |         |_____ maximum tilt movement (in degrees)
;            |         |_____ maximum pan movement (in degrees)
;            |_____ 1 means moving mirror, 2 means moving head
;
;-----------------------------------------------------------------------------
; Patching Information. (Upto 10 lines allowed)
; Upto 10 lines of 159 chars are allowed including formulae
; Variables used d=dmx number(1..512), h=handle(1..60), n=devicename (11-char)
; Allowed modifiers
;    +,-,*,/,(,) basic arithmatic
;    % means remainder after divide
;    & means logical AND
;    | means logical OR
;    R means reverse the bits of the curernt result (operates on a byte)
;    ^ means logical Exclusive OR (operates on a byte)
;    > means shift to the right
;    < shift to the left
;    r followed by number means get the value of that parameter
;    d DMX address
;    n Fixture name, a 0 terminated character string
;    h The handle number
DEVICEADDRESS
"Handle  %2d"h
"Fixture %11s"n
"DMX      %03d"d
""
"Dip Switch  1234 5678"
"Personality 0000 0000"
"Address      %b%b%b%b %b001"d/20%2,d/40%2,d/80%2,d/160%2,d/320%2
""
"0=OFF ( Right )"
"1=ON  ( Left  )"
DAEND
;
;-----------------------------------------------------------------------------
; Specify DMX limits
;
; minimum allowed dmx number
MINDMX=1
;
; maximum allowed dmx number
MAXDMX=481
;
; DMX number must be divisible by this
DIVBY=20
;
;-----------------------------------------------------------------------------
; DMX channel description
;
; Column by column description of each DMX channel
; 1. The channels bank number (1..12)
; 2. The upper faders in the bank (1) or the lower faders in the bank (61)
; 3. Channel type (L=LTP, H=HTP, I=Instant LTP, S=16-bit instant LTP,
;    s=16-bit Fadeable LTP
; 4. DMX offset (1..number of DMX channels)
; 5. The output level is proportionally reduced by this level (0..100%)
; 6. The curve number (applicable only to HTP channels), usually set to 1
; 7. Inverted (I) or Normal (N)
; 8. Attribute type (A=Colour Wheel, BCD=Colour Mix, E=Pan, F=Tilt,
;                                  0=uncategorised)
; 9. Checksum channel (Always 1)
;10. Attribute name, must be enclosed in quotes and upto 12 characters allowed
;11. The ON value of this channel (0..255)
```

```
;12. The Highlight level of this channel
;13. The Lolight level of this channel
;
DMX
3  61  S   1  100 1N  E  1  "Pan"            128  -1   -1  ; PAN
0   0  L   2  100 1N  E  1  "Pan Low"        128  -1   -1  ; PAN Low
3   1  S   3  100 1N  F  1  "Tilt"           128  -1   -1  ; TILT
0   0  L   4  100 1N  F  1  "Tilt Low"       128  -1   -1  ; TILT Low
4   1  I   5  100 1N  0  1  "Colour Wheel"     0   0    0  ; COLOUR WHEEL
10  1  L   6  100 1N  B  1  "Cyan"           255 255  255  ; CYAN
10 61  L   7  100 1N  D  1  "Magenta"        255 255    0  ; MAGENTA
9  61  L   8  100 1N  C  1  "Yellow"         255 255    0  ; YELLOW
6   1  I   9  100 1N  0  1  "Gobo 1"           0   0    0  ; GOBO 1
6  61  I  10  100 1N  0  1  "Gobo 2"           0   0    0  ; GOBO 2
8  61  I  11  100 1N  0  1  "Gobo Speed"       0   0    0  ; GOBO SPEED
5   1  L  12  100 1N  0  1  "Zoom"             0   0    0  ; ZOOM
5  61  L  13  100 1N  0  1  "Focus"            0  -1   -1  ; FOCUS
2   1  I  14  100 1N  0  1  "Iris "          255 255  255  ; IRIS
9   1  I  15  100 1N  0  1  "Effects"          0   0    0  ; EFFECT WHEEL
7  61  I  16  100 1N  0  1  "Frost"            0   0    0  ; FROST
2  61  L  17  100 1N  0  1  "Shutter"        255 255  255  ; SHUTTER
1   1  H  18  100 1N  0  1  "Dimmer"         255 255  255  ; DIMMER
8   1  L  19  100 1N  0  1  "Motor Speed"    255 255  255  ; MOTOR SPEED
11  1  I  20  100 1N  0  1  "Control"          0   0    0  ; Control
END
;
;----------------------------------------------------------------------------
; Text to be displayed when the Instrument is selected for Patching
;
TEXT
  Cyberlight Mode 1
Bank    Faders
   Bottom   Top
--------------------
 1 Dimmer   --
 2 Iris     Shutter
 3 Tilt     Pan
 4 Colour 1 --
 5 Focus    Zoom
 6 Gobo 1   Gobo 2
 7 Frost    --
 8 M-speed  Gobo spd
 9 Effect   Yellow
10 Cyan     Magenta
11 Control  --

INPUT and/or note DMX
number.
Press a channel grab
to make patch
END
;
;----------------------------------------------------------------------------
; Tables

; A colour table colour wheel, cyan, magenta, yellow
PFTABLE "Colour" -1  5   6   7   8
"Col 1"        1  0  ff ff ff
"Col 2"        2  0  ff  0  0
"Col 3"        3  0   0 ff  0
"Col 4"        4  0   0  0 ff
"Col 5"        5  0  ff ff  0
"Col 6"        6  0   0 ff ff
"Col 7"        7  0  ff  0 ff
"Col 8"        8  0  97 32 c8
"Col 9"        9  0  3d a3 bd
"Col 10"      10  0  eb 5a 17
PFEND


; Gobo
PFTABLE "Gobos" -1  9 10 11
"Gobo 1.1"     11  2  0  0
"Gobo 1.2"     12 af  0  0
"Gobo 1.3"     13 b9  0  0
"Gobo 1.4"     14 c3  0  0
"Gobo 1.5"     15 cc  0  0
"Gobo 1.6"     16 d7  0  0
"Gobo 1.7"     17 e1  0  0
"Gobo 2.1"     18  0 2d  0
"Gobo 2.2"     19  0 4b  0
"Gobo 2.3"     20  0 5f  0
PFEND


; Positions
PFTABLE "Positions" -1 1 3
```

```
"Middle"      21 80   80
"Left"        22 50   80
"Right"       23 b0   80
"Top"         24 80   50
"Bottom"      25 80   b0
"TLeft"       26 50   50
"TRight"      27 b0   b0
"BLeft"       28 50   b0
"BRight"      29 b0   50
PFEND

MACRO "HOME" 1  18   20
"data"        0  ff   ff
"delay"       1  20
"data"        0   0   ff
"delay"       1  20
"data"        0   0   40
"delay"       1  40
"data"        0   0    0
MEND•


MACRO "SHUTDOWN" 2  18   20
"data"            0  ff   ff
"delay"           1  20
"data"            0   0   ff
"delay"           1  20
"data"            0   0   80
"delay"           1  40
"data"            0   0    0
MEND
```

15. Glossary of terms

4D TRACK	The unique Avolites moving light Tracking system available using the Graphics Tablet.
ABSOLUTE	Mode for colours and positions on the Graphics Tablet in which the output of the Fixture corresponds directly with the position of the stylus on the Tablet. See NUDGE.
ADD	Type of flash button which adds the output being flashed into the existing output of the console. Now referred to as FLASH buttons.
ADDRESSES	The DMX Channels occupied by individual Fixtures. The first Channel occupied is usually encoded onto the Fixture somehow (often by switches) and called its ADDRESS.
ALIGN	A means of copying Attribute characteristics from the first Fixture selected to other selected Fixtures, resulting in the Fixtures being aligned to each other.
ATTRIBUTE	One Channel of an Intelligent Fixture.
ATTRIBUTE BANK	A set of buttons controlling which Attributes the wheels connect to.
AVOS	The most basic Operating mode in the console. AVOS allows loading of the System Software.
BACKUPS	Copies of a show stored to disk for safety.
BPM	Beats Per Minute.
CHASE	A sequence of one or more pre recorded steps programmed using the CHASE button. It can be replayed automatically if desired. Sometimes known as SEQUENCE, STACK or Linked Cues.
CHASE STEPS	Individual component steps of a Chase. See above
COLOUR CHANGER	A mechanical Fixture for changing the colour of a light source, usually by scrolling through a roll of different coloured gels or by moving special filters into the light beam.
COLOUR MIX	A system of three filters that can each crossfade from white to a colour, or one colour to another. It is a feature of some Intelligent Fixtures, which enables thousands of different colours to be created.
COMPLEX STEP	A Chase Step that has Individual Step Times programmed into it, and hence will not use Global times. See SIMPLE STEP, GLOBAL CHASE TIMES, INDIVIDUAL STEP TIMES.
CONNECTED CHASE	A Chase which has been brought under control of the Wheels and other Chase functions by pressing the CONNECT button.
COPY	A system of replication of Memories and Chases that links all the copies together. A change in any one of

	the replicas results in the same change to all of them. See PHOTOCOPY.
CROSSFADE	Or X FADE. A change in lighting state in which all HTP channels are assumed to be ON. HTP channels which are not explicitly set at a level will fade to zero. LTP channels follow Move Fade rules. See MOVE FADE
DEVICE	See FIXTURE.
DMX	DMX512(1990) a specification for communication between control desks and Fixtures, Originally for Dimmers it has been adopted as a control protocol for most Intelligent Fixtures. It can carry 512 different Channels of data.
DMX TRANSMISSION RATE	
	The rate at which DMX data is broadcast from the desk to the Fixtures.
FADE	A continuous transition from one level to another.
FADING CHANNEL	A channel which can ramp from one level to another. See INSTANT CHANNELS.
FIXTURE	Any lighting instrument that is patched using a Personality. Generally refers to a moving light or colour changer, not an individual Dimmer channel. Also called Intelligent Fixture, Device, Instrument, Moving Light.
FLASH	Type of flash button which adds the output being flashed into the existing output of the console. Historically called the ADD button. See also SWOP.
FLIP	A function for use with Moving Head Fixtures. They have two possible Pan and Tilt positions for each point on stage, and FLIP will alternate between them.
FOCUS	What Palettes are called on other Avolites consoles. Occasionally some screen messages may display this term. See PALETTE.
GENERIC	Term used to indicate a Dimmer channel. See also FIXTURE.
GLOBAL CHASE TIMES	
	Fade and Wait times which apply to any Chase Step which does not have Individual Step times programmed into it. These steps are called SIMPLE STEPS. See INDIVIDUAL STEP TIMES, COMPLEX STEP, SIMPLE STEP.
GRAPHICS TABLET	Optional input device for the Pearl that controls Dimmers and Fixtures by means of clicking a Stylus or a Puck on an electronic slate.
GROUP	A GROUP is a pre-programmed collection of Fixtures that can be selected with a single button press.
HANDLE	The fader and flash/swop buttons which are used to control an individual fixture or dimmer channel.
HTP	Highest Takes Precedence, a mechanism for

	determining the output level of a Channel held in more than one Playback Channel. The Channel outputting the Highest value at any given time will always determine the level of the Channel. Also see LTP.
INCLUDE	A means of transferring the contents of a Memory or Chase Step into the Programmer.
INDIVIDUAL STEP TIMES	Times programmed into one individual Chase Step from the TIMES menu. These steps are called COMPLEX STEPS. See GLOBAL CHASE TIMES, SIMPLE STEP, COMPLEX STEP.
INSTANT CHANNEL	A channel which does not use fades generated by the console, and moves in discrete jumps from one state to another. See FADING CHANNEL.
INSTANT ACCESS	A function on the Graphics Tablet that does not require the correct Attribute Bank to be selected in order to control an Attribute.
INSTRUMENT	See FIXTURE.
INTELLIGENT FIXTURE	See FIXTURE.
LCD	Refers to the console's on-board displays (stands for Liquid Crystal Display).
LED	Refers to the small red lights within the buttons on the console (stands for Light Emitting Diode).
LINKS	Connections between Chase Steps enabling them to run on from one to another automatically.
LOCATE FIXTURE	A feature of the console that makes it easy to find your selected Fixtures by putting them in Open White with Pan and Tilt at 50%.
LTP	Latest Takes Precedence, a mechanism for passing control of a channel from one Playback Fader to another on the basis that the latest Playback Fader to be moved has control, providing that Playback Fader has moved passed the Trigger point. (See TRIGGER POINT). Also see HTP.
MACROS	Macros allow functions programmed into an Intelligent Fixture by the manufacturer to can be executed by sending a DMX command sequence from the console. They can allow you to reset the Fixture for example. The DMX command sequences are defined within the Personality File.
MEMORY	A single stage look programmed onto a Playback button or fader. It does not have Wait times. Also known as CUE, STATE, SCENE, LOOK.
MEMORY MODE	A playback format programmed into a Memory. There are Memory Modes 0, 1 and 2.
MIDI	Stands for Musical Instrument Digital Interface. It is the established hardware and software specification enabling the exchange of data between digital

musical instruments (such as keyboards) and other devices such as computers, sequencers and sound and lighting consoles.

ML MENU	Stands for Moving Light Menu.
MOVE FADE	A change in lighting state in which only those channels that are ON change in level.
NUDGE	Mode for colours and positions on the Graphics Tablet in which the output of the Fixture changes relative to the movement of the stylus on the Tablet. See ABSOLUTE.
PALETTE	A term used to describe a referenced pre-defined state for an Attribute that can be recalled whenever required during programming. Each Fixture may be different in the Palette, the entries can be named, and recalled with a single button press.
PARK	This happens to a fixture when its DMX address is taken by another fixture during a later patching session. The fixture must then be repatched.
PERSONALITY FILE	A description of what Attributes a particular Intelligent Fixture has and how the console will patch and use these. It also determines which Attribute Bank will control which Attribute. Avolites Personality Files are in ASCII format and can be edited on any personal computer which can read and save onto MS DOS 1.44 Mb (High Density) 3.5 inch disks.
PERSONALITY DISK	A disk on which Personality Files are stored.
PHOTOCOPY	A method of replicating Memories and Chases that are completely independent of each other. See COPY.
PLAYBACK	Area of the console that can replay recorded Memories or Chases using Playback Faders.
PRESET FADERS	The 100 faders across the top of the console which are used for controlling individual fixtures or dimmer channels.
PRESET FOCUS	What Palettes are called on other Avolites consoles. Occasionally some VDU screen messages may display this term. See PALETTE.
PROGRAM	Desk mode in which programming functions are enabled, but System Software is protected. See RUN, SYSTEM.
PROGRAMMER	The part of the console which contains Channel information which has been changed by the user, prior to recording.
RUN	Desk mode in which all Playback functions are enabled, but all programming functions disabled.
SCRIPT FILES	System that allows Playback to be automated and controlled by Timecode.
SELECTED	A Fixture that is under manual control.
SEQUENCE	See CHASE.

SHAPE	A preprogrammed effect available which is applied to an Attribute. It can then be customised and stored in a Memory.
SHARED PALETTE	A Palette in which information is only stored for one Fixture, but is available to all Fixtures of that type.
SIMPLE STEP	A Chase Step which does not have Individual Step Times programmed into it, and hence will use Global Chase times. See COMPLEX STEP, GLOBAL CHASE TIMES, INDIVIDUAL STEP TIMES.
SOFTKEY	Buttons marked A-F, with different functions which are shown on the VDU screen.
STACK	See CHASE.
STAGE REMOTE	Optional input device for the Pearl allowing control of DMX Channels and recall of Memories and Chase Steps.
SWOP	Type of flash button which turns on the output being flashed and turns off all other output while the button is pressed. Sometimes called "Solo". Also used for selecting fixtures or playbacks when programming. See also FLASH.
SYSTEM	Desk mode allowing access to the operating software of the Pearl.
SYSTEM SOFTWARE	The software which runs the Pearl.
TC	Abbreviation for Timecode. In the Pearl, this is always MIDI Timecode.
TRACKING	A mode in which Moving Lights can move around an area all pointing at the same spot.
TRAINING	The process of recording points on a stage so that the console can work out the TRACKING for Moving Lights.
TRIGGER POINT	The level set in the User Settings which determines at which point a Playback Fader triggers the LTP Channels programmed onto it.
UNFOLD	A function that allows Chase Steps to be laid out onto Playback Faders for easy editing.
USER SETTINGS	User definable desk settings. Found in the USER SETTINGS menu.
VDU	A computer monitor plugged into the VDU socket on the Pearl giving further information about the operation of the console.
WAIT	A period of time that elapses before a Fade happens in a Chase.
WIPEALL	A process which clears all the previous programming out of the desk, but does not touch the System Software.
WHEEL A	This is the left hand wheel. It is used to control the upper Attribute of each Attribute Bank.

WHEEL B   This is the right hand wheel. It is used to control the lower Attribute of each Attribute Bank.

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