MAC III™ PROFILE
USER MANUAL

Martin®

Dimensions

All measurements are expressed in millimeters

936

435

536

712

337

713

160

403

Min. C/C 800*

960
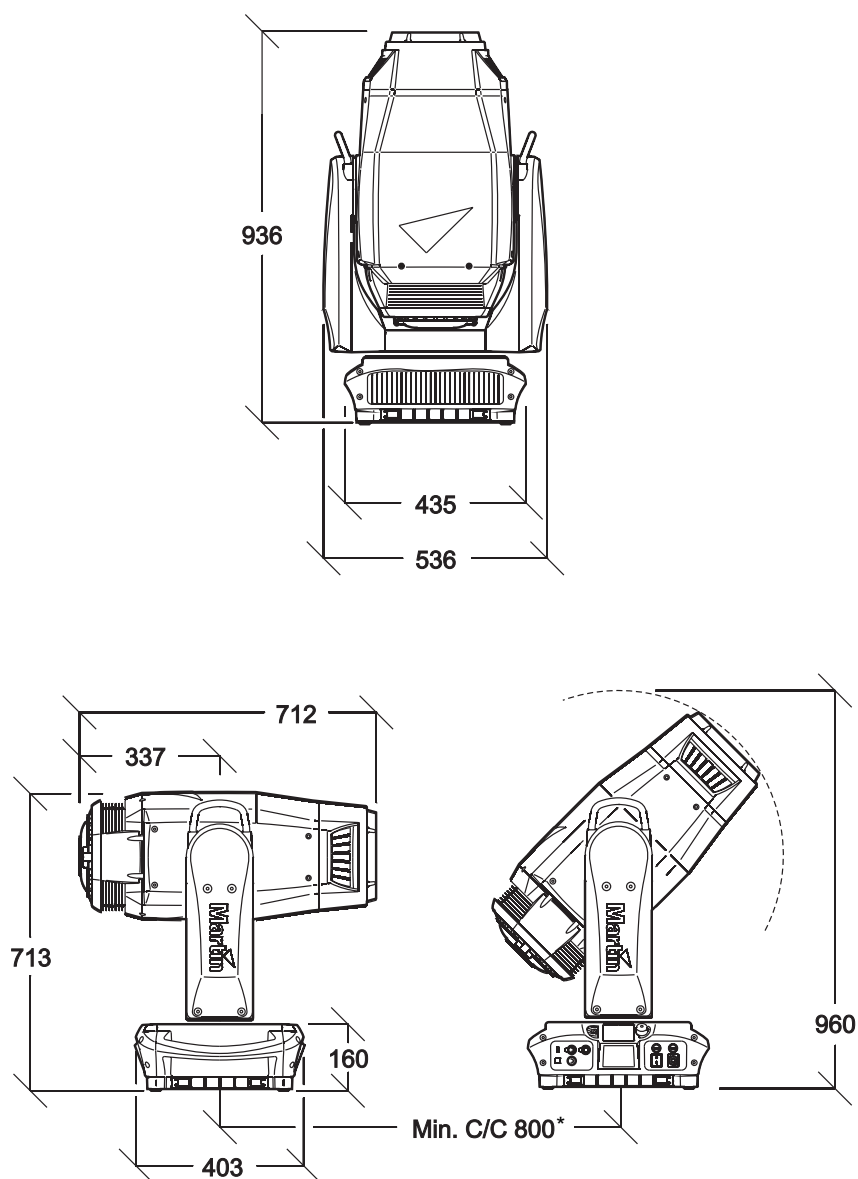
*The minimum center-to-center distance can be reduced if pan limits are set via the control menus

Contents

Safety Information

WARNING!
Read the safety precautions in this section before installing, powering, operating or servicing this product.

The following symbols are used to identify important safety information on the product and in this manual:

DANGER! Safety hazard. Risk of severe injury or death.	**DANGER!** Refer to manual before installing, powering or servicing.	**DANGER!** Hazardous voltage. Risk of severe or lethal electric shock.	**Warning!** Fire hazard.	**Warning!** Burn hazard. Hot surface. Do not touch.	**Warning!** Risk of eye injury. Safety glasses must be worn.	**Warning!** Risk of hand injury. Safety gloves must be worn.

This product is for professional use only. It is not for household use.

This product presents risks of severe injury or death due to fire and burn hazards, electric shock, lamp explosion and falls.

Read this manual before installing, powering or servicing the fixture, follow the safety precautions listed below and observe all warnings in this manual and printed on the fixture.

If you have questions about how to operate the fixture safely, please contact your Martin supplier or call the Martin 24-hour service hotline on +45 8740 0000, or in the USA on 1-888-tech-180.

PROTECTION FROM ELECTRIC SHOCK

- Disconnect the fixture from AC power before removing or installing any cover or part – including the lamp and fuses – and when not in use.
- Ensure that the fixture is electrically connected to ground (earth).
- Use only a source of AC power that complies with local building and electrical codes and has both overload and ground-fault (earth-fault) protection.
- Connect the fixture to AC power either using the supplied power cable or via 3-conductor cable that is rated minimum 20 amp, extra hard usage. Suitable cable types include ST, STW, SEO, SEOW and STO.
- Before using the fixture, check that all power distribution equipment and cables are in perfect condition and rated for the current requirements of all connected devices.
- Isolate the fixture from power immediately if the power cable or power plug are in any way damaged, defective or wet, or if they show signs of overheating.
- Do not expose the fixture to rain or moisture.
- Refer any service operation not described in this manual to an authorized Martin Service partner.

LAMP SAFETY

- Prolonged exposure to an unshielded discharge lamp can cause eye and skin burns. Do not stare directly into the light output. Never look at an exposed lamp while it is lit.
- Do not operate the fixture with missing or damaged covers, shields, lenses or ultraviolet screens.
- A hot discharge lamp is under pressure and can explode without warning. Allow the fixture to cool for at least 2 hours 45 minutes and protect yourself with safety glasses and gloves before handling a lamp or servicing the fixture internals.
- Replace the lamp immediately if it becomes visually deformed, damaged or in any way defective
- Monitor hours of lamp use and lamp intensity and replace the lamp when it reaches the limit of its service life as specified in this manual or by the lamp manufacturer.
- Install only an approved lamp.
- If the quartz envelope of a discharge lamp is broken, the lamp releases a small quantity of mercury and other toxic gases. If a discharge lamp explodes in a confined area, evacuate the area and ventilate it thoroughly. Wear nitrite gloves when handling a broken discharge lamp. Treat broken or used discharge lamps as hazardous waste and send to a specialist for disposal.

PROTECTION FROM BURNS AND FIRE

- The exterior of the fixture becomes very hot – up to 170° C (338° F) – during use. Avoid contact by persons and materials. Allow the fixture to cool for at least 2 hours 45 minutes before handling.
- Keep all combustible materials (e.g. fabric, wood, paper) at least 0.2 m (8 in.) away from the fixture. Keep flammable materials well away from the fixture.
- Provide a minimum clearance of 0.1 m (4 in.) around fans and air vents.
- Do not illuminate surfaces within 2.5 m (100 in.) of the fixture.
- Position or shade the head so that the lens does not face the sun at any time during daylight hours. The lens can focus the sun's rays inside the fixture, creating a potential fire hazard.
- Do not operate the fixture if the ambient temperature (Ta) exceeds 40° C (104° F).
- Do not modify the fixture in any way not described in this manual or install other than genuine Martin parts. Do not stick filters, masks or other materials onto any lens or other optical component. Use only Martin-approved accessories to mask or modify the light beam.
- Do not attempt to bypass a thermostatic switch or fuse. Replace defective fuses with ones of the specified type and rating only.

PROTECTION FROM INJURY DUE TO FALLS

- Do not lift or carry the fixture alone.
- Use two evenly spaced clamps to suspend the fixture from rigging structures. Do not use only one clamp.
- When clamping the fixture to a truss or other supporting structure at any other angle than with the yoke hanging vertically downwards, use two half-coupler clamps. Do not use G-clamps, quick-trigger clamps or any other type of clamp that does not completely encircle the supporting structure when fastened.
- When suspending the fixture, ensure that the supporting structure and all hardware used can hold at least 10 times the weight of all devices suspended from them.
- Do not use the handles in the base or the handles on the top of the yoke for hoisting or secondary attachment.
- Install as described in this manual a secondary attachment such as a safety cable that is approved by an official body such as TÜV as a safety attachment for the weight of all the fixtures it secures. The safety cable must comply with EN 60598-2-17 Section 17.6.6 and be capable of bearing a static suspended load ten times the weight of the fixture.
- Check that all external covers and rigging hardware are securely fastened.
- Block access below the work area and work from a stable platform whenever installing, servicing or moving the fixture.

Introduction

Thank you for selecting the Martin™ MAC III Profile™. This moving-head spotlight features:
- 1500 Watt short-arc high-output Osram HTI 1500W/60/P50 discharge lamp with semi-hot restrike
- Backlit graphic display and battery power (mains power not required for fixture setup)
- Full-range mechanical dimmer with four dimming curve options, plus mechanical shutter
- Full-spectrum CMY color mixing and CTO color temperature control
- 7 interchangeable dichroic color filters
- Two gobo wheels, each with 5 interchangeable rotating gobos with 16-bit position indexing
- Interchangeable gobo animation wheel
- Interchangeable four-facet rotating prism
- Iris
- Variable focus and zoom with 3-zone zoom/focus linking system
- 540° of pan and 268° of tilt with user-settable pan/tilt limits
- Electronic "flicker-free" ballast and auto-sensing switch-mode power supply.

For the latest firmware updates, documentation, and other information about this and all Martin Professional products, please visit the Martin website at http://www.martin.com

Comments or suggestions regarding this document may be e-mailed to service@martin.dk or posted to:

Service Department
Martin Professional A/S
Olof Palmes Allé 18
DK-8200 Aarhus N
Denmark

Unpacking

The MAC III Profile is packaged in either a cardboard box or a flightcase that is designed to protect the product during shipment. The following items are included:
- 1500 W discharge lamp (installed)
- Two 16 AT fuses (installed)
- 2 omega brackets for clamp attachment
- This user manual

Using for the first time

Before applying power to the fixture:
- Carefully review the safety information starting on page 5.
- Check that the fuses in the Live and Neutral fuseholders near the main on/off switch match the local AC power voltage as described in "Power input and primary fuses" on page 8.
- If necessary, install a cord cap (mains plug) on the power cable as described in "Power connection" on page 8.
- Unlock the tilt lock as described on page 27.
- Check that the base is fastened securely so that the torque reaction when the head is panned does not cause the fixture to move.

When powered up, check lamp alignment as described on page 10.

AC power

Warning! For protection from electric shock, the fixture must be grounded (earthed). The AC mains supply must be fitted with a fuse or circuit breaker and ground-fault (earth-fault) protection.

Important!Check that the correct fuse is installed before applying power.

Power input and primary fuses

The MAC III Profile features an auto-sensing switch-mode power supply that automatically adapts to 200-240 V (nominal) AC power at 50 or 60 Hz. It is protected by two 16 A slow-blow primary fuses, one for the live conductor and one for the neutral conductor.

To install fuses:

1. Disconnect the fixture from AC power.
2. Use a flat-headed screwdriver to open the two main fuseholders, located above the power on/off switch and mains input socket.
3. Install one 16 AT fuse in each fuseholder.
4. Reinstall the fuseholders before reapplying power.
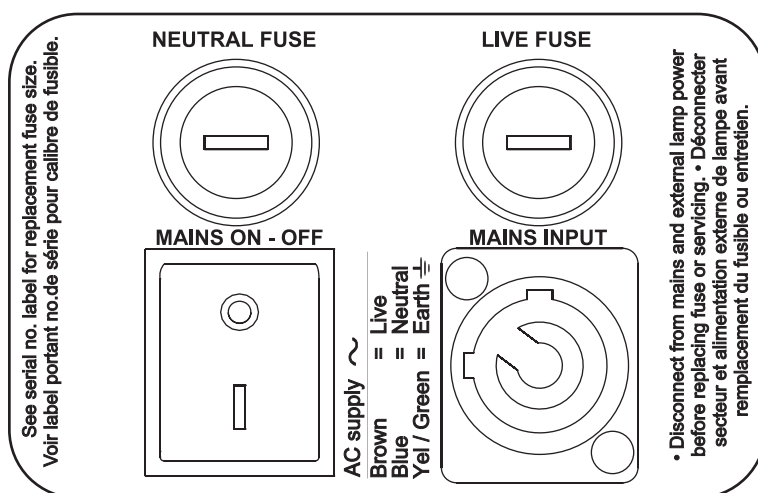
Power connection

Important! *Connect the MAC III Profile directly to AC power. Do not connect it to a dimmer system; doing so may damage the fixture.*

If you install a cord cap (mains plug) on the power cable to allow connection to power outlets, install a grounding-type (earthed) plug, following the plug manufacturer's instructions. Table 1 shows some possible mains power pin identification schemes; if the pins are not clearly identified, or if you have any doubts about proper installation, consult a qualified electrician.

To apply power, first check that the head tilt locks are released and then set the power switch on the base to the "I" position.

Wire Color	Pin	Symbol	Screw (US)
brown	live	L	yellow or brass
blue	neutral	N	silver
yellow/green	ground (earth)	⏚	green

Table 1: Cord cap connections

The MAC III Profile is supplied with a power cable with a Neutrik PowerCon NAC3FCA cable connector for power input. If you replace the power cable, observe the pinout marked on this cable connector. Connect the terminal marked ⏚ to ground (earth), the terminal marked **N** to neutral, and the terminal marked **L** to live. Replacement power cable must be 3-conductor, rated minimum 20 amp, extra-hard usage. Suitable cable types include ST, STW, SEO, SEOW and STO.

Lamp

About the discharge lamp

The MAC III Profile is designed for use with an Osram HTI 1500W/60/P50 lamp. This highly efficient double-ended short-arc source provides a color temperature of 6000 K, a color rendering index greater than 85, an average service life of 750 hours and semi-hot restrike, meaning that a hot lamp is ready to strike again after two minutes.

Lamp power is automatically reduced to approximately 800 W after 10 seconds when the fixture is blacked out in order to reduce cooling fan activity and power consumption. The lamp returns to 1500 W as soon as the dimmer and/or shutter are opened.

Warning!   ***Installing any other lamp may create a safety hazard or damage the fixture!***

To reduce the risk of explosion, replace the lamp when it reaches the limit of its average service life, i.e. when usage reaches 750 hours. Never exceed the lamp's average service life by more than 10%. To read lamp hours in the fixture's display, refer to the section on lamp hours readouts on page 18. Replace the lamp immediately if it is deformed or in any way defective.

For maximum service life, avoid powering the lamp off until it has warmed up for at least 5 minutes.

Lamp replacement

Warning! Wear safety glasses and gloves when handling lamps. The clear lamp bulb is integral with the ceramic lamp base. Do not try to separate the bulb from the base.

Important! The lamp can be a stiff fit in its holder. Twist the lamp base a full 45° clockwise when installing to ensure that the lamp contacts are fully engaged.

Replacement lamps are available from your Martin dealer requesting P/N 97010326.

The clear bulb must be perfectly clean. Do not touch it with your fingers. Clean the lamp with an alcohol wipe and polish it with a dry cloth before installing, particularly if you accidentally touch the bulb.

To replace the lamp:

1. Disconnect the fixture from power and allow it to cool for at least 2 hours 45 minutes.
2. Lock the head.
3. Release the screw on the lamp access cover and open the cover.
4. Grasp the ceramic lamp base, twist it 45° counterclockwise and withdraw the lamp from the fixture as shown in Figure 2.
5. The lamp base has two metal contacts, one narrow and one wide, that fit into corresponding narrow and wide slots in the lampholder. Line up the contacts on the replacement lamp's base with the corresponding slots in the lampholder, slide the lamp into the fixture so that the contacts are fully engaged in the slots, and then twist the lamp base a full 45° clockwise until it locks into position with a noticeable click. The lamp is a stiff fit and trying to strike a lamp that is not correctly installed can cause damage that is not covered by the product warranty, so ensure that the lamp is correctly locked into position.
6. Close the lamp access cover and tighten the screw to secure the cover before reapplying power.
7. After installing a new lamp, reset the lamp hour counter (see the section on lamp hours readouts on page 18).
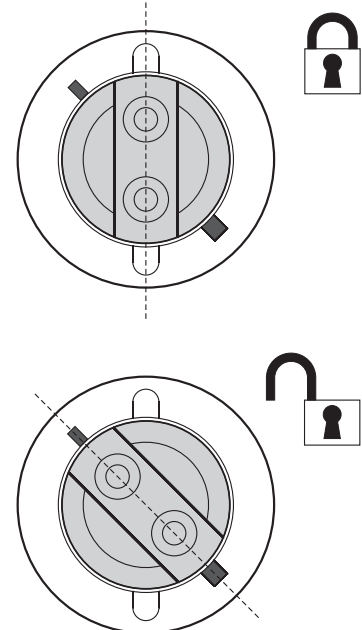
Figure 2: Lamp removal / refitting

Lamp adjustment

Warning! Adjust the lamp with the fixture cool. The fixture may become hot during adjustment, so wear heat-resistant safety gloves.

As well as being undesirable for aesthetic reasons, a significant hot-spot in the beam will focus extra heat onto optical components and may cause damage that is not covered by the product warranty.

After fitting a new lamp, adjustment may be required to obtain an even beam.

To adjust the lamp:

1. If the fixture has been in use, allow it to cool for at least 2 hours 45 minutes to avoid the danger of burns, and wear heat-resistant safety gloves.

2. Apply power, allow the fixture to reset, then set zoom to narrow, turn on the lamp and open the mechanical shutter.

3. Aim the fixture at an even surface and make sure no further commands can be sent by DMX.

4. See Figure 3. Screw the three lamp adjustment screws in or out to obtain the most even beam.
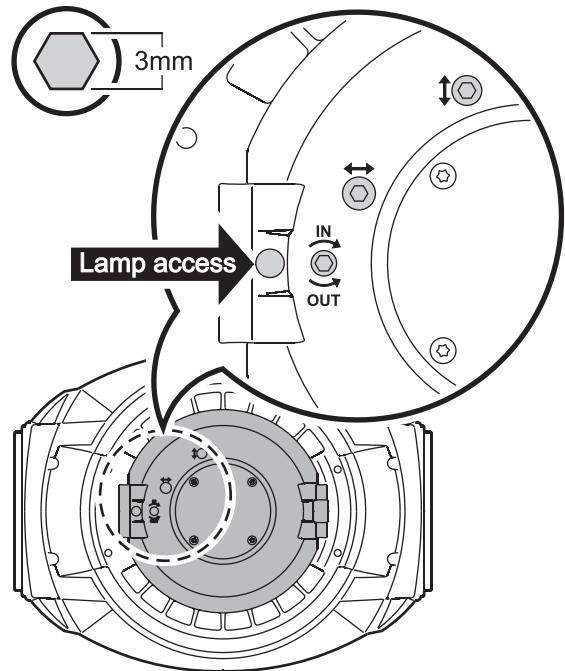
Figure 3: Lamp adjustment screws

DMX data link

The MAC III Profile has 5-pin locking XLR sockets for DMX and RDM input and output. The default pin-out on both sockets is:

- pin 1 to shield

Port 1, DMX communication:

- pin 2 to data 1 cold (-)
- pin 3 to data 1 hot (+)

Port 2, RDM communication:

- pin 4 to data 2 cold (-)
- pin 5 to data 2 hot (+).

The default use of Ports 1 and 2 for DMX and RDM respectively can be altered in the control panel (see "Personality – tailoring performance" on page 16).

Tips for reliable data transmission

- Use shielded twisted-pair cable designed for RS-485 devices: standard microphone cable cannot transmit control data reliably over long runs. 24 AWG cable is suitable for runs up to 300 meters (1000 ft). Heavier gauge cable and/or an amplifier is recommended for longer runs.
- To split the serial link into branches, use a splitter such as the Martin 4-Channel Opto-Isolated RS-485 Splitter/Amplifier.
- Do not overload the link. Up to 32 devices may be connected on a serial link.
- Terminate the link by connecting a 120 Ohm, 0.25 Watt resistor between the data 1 hot (+) and cold (-) conductors (and between data 2 hot and cold if used) at – or just after – the data output of the last fixture on the link. The purpose of the resistor is to "soak up" the control signal so it does not reflect and cause interference. If a splitter is used, terminate each branch of the link.

To connect the data link

1. Connect the DMX data output from the controller to the MAC III Profile's input (male XLR) socket.
2. Run the data link from the MAC III Profile's output (female XLR) socket to the input of the next fixture.
3. Insert a male 120 Ohm XLR termination plug in the output socket of the last fixture on the link.

Physical installation

⚠ *Warning! The MAC III Profile has a powerful pan motor. The torque reaction when the head is panned suddenly can cause the base to move if the fixture is standing unsecured on a surface. Do not apply power to the MAC III Profile unless the base is securely fastened to a surface or to rigging hardware.*

Warning! Use 2 clamps to rig the fixture. Do not hang the fixture from only one clamp. Lock each clamp with both 1/4-turn fasteners. Fasteners are locked only when turned fully clockwise.

Warning! When suspending the fixture above ground level, secure it against failure of primary attachments by attaching a safety wire that is approved as a safety attachment for the weight of the fixture to the attachment point in the base. Do not use the carrying handles for secondary attachment.

Warning! When clamping the fixture to a truss or other structure at any other angle than with the yoke hanging vertically downwards, use two clamps of half-coupler type. Do not use any type of clamp that does not completely encircle the structure when fastened.

⚠ *Warning! Position or shade the head so that the lens does not face the sun at any time during daylight hours. The MAC III Profile's lens can focus the sun's rays inside the fixture, creating a potential fire hazard and causing internal damage.*

Important! Do not point the output from other lighting fixtures at the MAC III Profile from a distance of less than 3 m (10 ft.), as intense illumination can damage the display.

The MAC III Profile can be fastened to a surface such as a stage or clamped to a truss in any orientation. Clamps must be half-coupler type (see Figure 5) unless the fixture is installed with the yoke hanging vertically downwards. The mounting points allow the clamp brackets to be fastened parallel, perpendicular or at 45° to the front, as shown Figure 4.

Pan and tilt range can be limited via the control panel to allow fixtures to be installed close to each other or to obstacles with no risk of collision (see **PAN/TILT SETTINGS** on page 16).

Clamping the fixture on a truss

1. Check that the rigging clamps are undamaged and can bear at least 10 times the weight of the fixture. Check that the structure can bear at least 10 times the weight of all installed fixtures, clamps, cables, auxiliary equipment, etc.

2. Bolt each clamp securely to a clamp bracket with an M12 bolt (minimum grade 8.8) and lock nut.
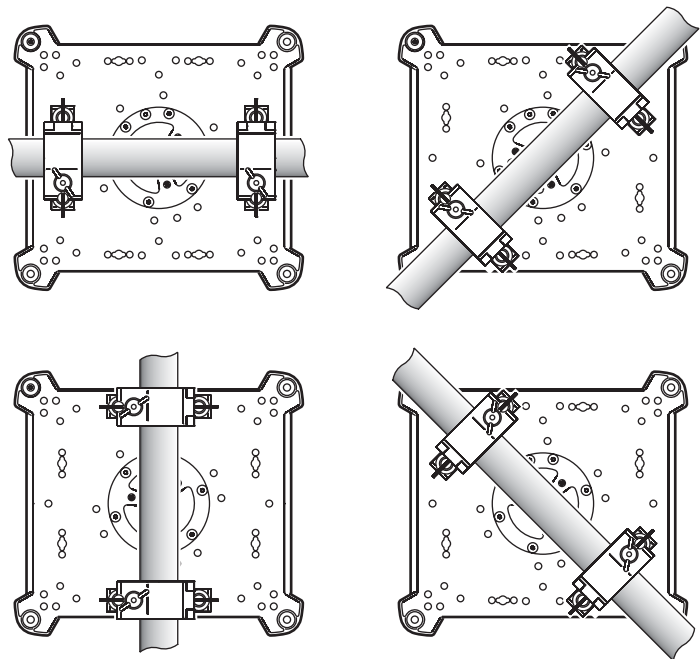
Figure 4: Clamp bracket positions

Figure 5: Martin half-coupler clamp

3. See Figure 6. Note the position of the arrows on the bottom of the base that indicate the front of the fixture.
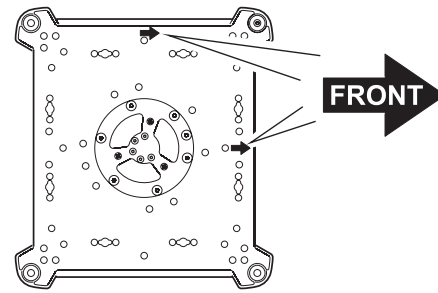
Figure 6: Front of fixture

4. Align a clamp with 2 mounting points in the base. See Figure 7. Insert the fasteners into the base and turn both levers a full 1/4-turn clockwise to lock. Install the second clamp.

5. Block access under the work area. Working from a stable platform, hang the fixture on the truss with the arrows marked **FRONT** printed on the base of the fixture facing towards the area to be illuminated. Tighten the rigging clamps.
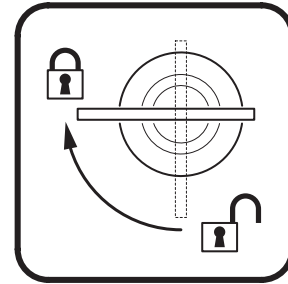
Figure 7: Locking 1/4-turn fasteners

6. See Figure 8. Install a safety wire that is approved as a safety attachment for the weight of the fixture by looping it through the safety attachment wheel on the bottom of the base.

7. Check that the tilt lock is released. Check that there are no combustible materials within 0.2 m (8 in.) or surfaces to be illuminated within 2.5 m (100 in.) of the fixture, and that there are no flammable materials nearby.

8. Check that there is no possibility of heads or yokes colliding with other fixtures. Note that pan and tilt range on the MAC III Profile can be restricted by setting minimum and maximum limits via the control menus. This feature allows fixtures to be installed closer together or closer to obstacles.

9. Check that other lighting fixtures cannot project light at the MAC III Profile from a distance of less than 3 m (10 ft.), as intense illumination can damage the MAC III Profile's display.
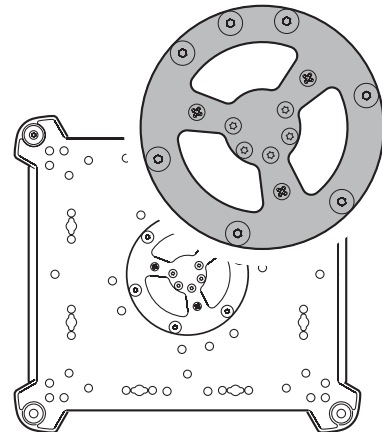

Figure 8: Safety cable attachment point

Control panel operations

You can configure individual fixture settings such as the MAC III Profile's DMX address, read out data and execute service using the fixture's backlit graphic display and control panel. The control menu overview starting on page 43 gives a complete list in table form of the menus and commands available.

Figure 9: Display and control panel

After a pause while the fixture boots and resets, the DMX address and any status messages (see page 47) appear in the graphic display **A** when the MAC III Profile is powered on.

Using the control panel

Click (i.e. press once) the jog wheel **B** once to enter the menus. Rotate the jog wheel to scroll up and down menus and click the jog wheel once to make a selection. Rotating the jog wheel faster gives high-speed scrolling.

Once you have made a selection, either click the jog wheel to save it or press the Escape button **C** to cancel. If you save the selection, **Saving...** is displayed for 1 second. If you cancel, the menu returns to the previously saved value. Press the Escape button to step backwards through the menus.

The jog wheel and Escape button continue to function while the **Saving...** message is displayed.

Battery power

The display and control panel are powered by the MAC III Profile's onboard battery. This gives access to the most important functions in the control panel – including DMX addressing – when the fixture is not connected to AC power.

To activate the display when the fixture is not connected to power, press the Escape button. The display extinguishes after 10 seconds with no jog wheel activity.

A battery icon in the display shows charging status.

Status indicators

The status indicators on the right of the display have the following functions:
• **LAMP** lights when the lamp is powered.
• **ETHERNET** lights when the MAC III Profile is correctly connected to an Ethernet network.
• **DMX** lights when the MAC III Profile is receiving a valid DMX signal.
• **PAN/TILT** lights when pan/tilt limits have been activated (see page 16).

DMX address

The DMX address, also known as the start channel, is the first channel used to receive instructions from the controller. For independent control, each fixture must be assigned its own control channels. If you give two MAC III Profiles the same address, they will behave identically. Address sharing can be useful for diagnostic purposes and symmetrical control, particularly when combined with the inverse pan and tilt options.

DMX addressing is limited to channels 1 - 486 in 16-bit mode and 1 - 483 in 16-bit extended mode. The upper limit makes it impossible to set the DMX address so high that you are left without enough control channels for the fixture.

DMX address setting

To set the fixture's DMX address:
1. Press the jog wheel to enter the main menu.
2. Rotate the jog wheel to scroll down to **DMX ADDRESS**, then click the jog button. Rotate the jog wheel to scroll to the desired address and click the jog button to save.
3. Press the Escape button to step back to the main menu.

DMX modes

The **PROTOCOL SET** menu lets you set the MAC III Profile to one of the two DMX operating modes, 16-bit and 16-bit extended.

The basic 16-bit mode offers coarse control of all effects plus fine control of gobo indexing angle on both gobo wheels, pan and tilt. The 16-bit extended mode requires three more DMX channels than the basic 16-bit mode and provides all features of the basic 16-bit mode plus fine control of the dimmer, zoom and focus.

The MAC III Profile requires 27 DMX channels in 16-bit mode and 30 DMX channels in 16-bit extended mode.

DMX mode setting

To set the fixture's DMX mode:
1. Click the jog wheel to enter the main menu.
2. Rotate the jog wheel to scroll down to **PROTOCOL SET**, then click the jog wheel. Rotate the jog wheel to select either **16 bit** or **16 Bit Ext.**, then click the jog wheel to save.
3. Press the Escape button to step back to the main menu.

Fixture ID

The MAC III Profile lets you set a four-digit ID number to ease identification of the fixtures in an installation. When a fixture is powered on for the first time, it displays its DMX address by default. As soon as you set an ID number other than **0000** in **FIXTURE ID**, the MAC III Profile will display this ID number by default.

To let you distinguish easily between ID numbers and DMX addresses, the ID number is always displayed with four digits and DMX address is displayed with between one and three digits.

Personality – tailoring performance

The MAC III Profile provides several options that let you optimize the fixture for different applications in the **PERSONALITY** menu:

- **PAN/TILT SETTINGS** lets you swap and/or invert pan and tilt.

- **P/T LIMIT SETTINGS** lets you define minimum and maximum limits for both pan and tilt angles, making it possible to install fixtures close to obstacles such as other fixtures with no risk of collision. Settings are based on the following principles:

  - Pan range for pan limit purposes runs from 0° to 360° clockwise as seen looking at the fixture from the top of the yoke towards the base.

  - Tilt range is +134° and -134° either side of 0°, which is the head straight up position with the front glass pointed directly away from the base.

  - The light beam points fully forward (the front of the fixture is indicated by the arrows printed under the base) when pan is set to 90° or 450° and tilt is set to +90°.

  - Selecting **Inside** keeps pan and tilt inside the limits you set – i.e. angles define a 'safe zone'.

  - Selecting **Outside** keeps pan and tilt outside the limits you set – i.e. angles define a 'no-go zone'.

  - Limits are not activated until the head is panned and tilted into its safe zone.

  - When pan/tilt limits are active, the PAN/TILT light at the bottom right of the display lights yellow.

See Figure 10. To limit pan so that it stays inside a safe zone 20° either side of fully forward and limit tilt so that it stays inside a safe zone 18° either side of fully forward, for example:

1. Set **PAN MINIMUM** to **70°**.
2. Set **PAN MAXIMUM** to **110°**.
3. Set **TILT MINIMUM** to **+72°**.
4. Set **TILT MAXIMUM** to **+108°**.
5. Set **P/T LIMIT AREA** to **Inside**.

Pan safe zone
Inside, min. +70°, max. +110°

Tilt safe zone
Inside, min. +72°, max. +108°
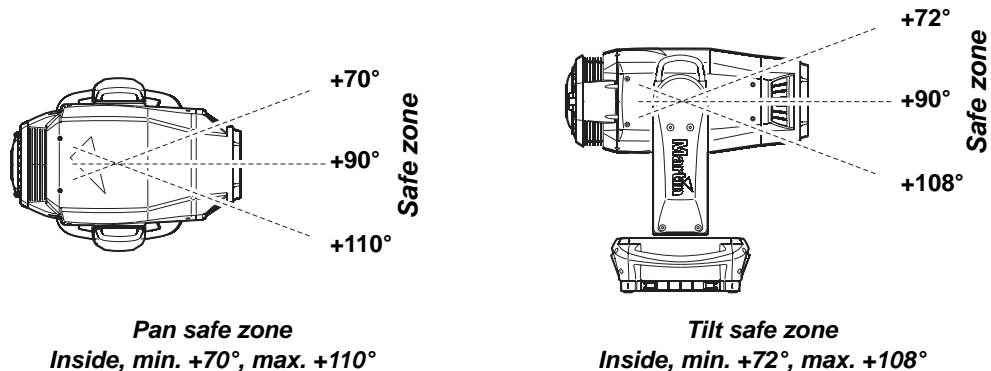
Figure 10: Pan/Tilt limit settings

Important! *Regardless of the pan and tilt limits you set, when you power the fixture off, the head will sink under gravity to the nearest rest position (e.g. with the lens pointing vertically downwards if the fixture is hanging in a rig, or to one side if the fixture is standing fastened to a horizontal surface). When you power the fixture on, the head will not move until the fixture receives a pan or tilt command. When a command is received, if the head's rest position is outside its pan/tilt limits, the head will move slowly until it is within its limits. This feature reduces the risk of damage caused by a collision.*

- **LINKED ZOOM/FOCUS** sets focus to automatically adjust when you use the zoom effect (see "Focus and zoom" on page 21).

- **LAMP COOLING** sets the lamp cooling effect to 50% or 80%. The color temperature of the lamp varies slightly with the level of lamp cooling applied. The default level is 80%.

- **FAN CLEAN MODE** gives three options for automatically clearing dirt from fans:

  - **Off** sets fans to normal operation with no fan cleaning function.

  - **Auto** sets fans to normal operation, but if a fan error is detected, the fan that has reported an error speeds up to 100% for a short period and then returns to normal operation. If the fan error is still detected after three attempts at cleaning, the fan returns to normal operation but continues to report a

fan error. This feature works independently for each of the fans. Attempts at cleaning are reset to zero if the fixture is reset or if **FAN CLEAN MODE** is updated.

- **Forced** sets all fans to 100% speed until another **FAN CLEAN MODE** setting is selected.

This feature does not eliminate the need to inspect and clean cooling fans at regular intervals (see "Cleaning" on page 28).

• **DIMMING CURVE** provides four dimming options (see Figure 11):
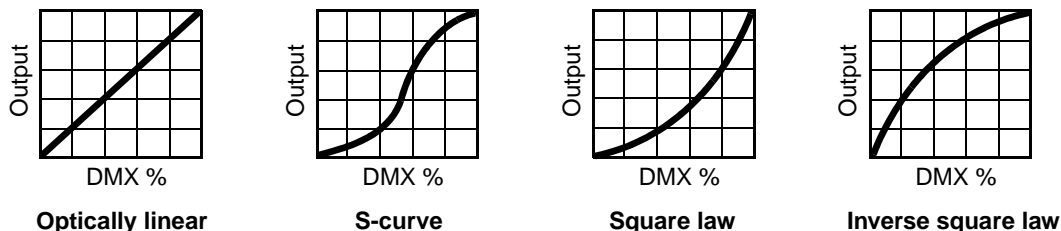
Figure 11: Dimming curve options

- **Optically linear** – the increase in light intensity appears to be linear as DMX value is increased.
- **S-curve (voltage RMS)** – light intensity control is finer at low levels and high levels and coarser at medium levels. This curve emulates the RMS voltage dimming characteristics of an incandescent lamp such as the tungsten halogen lamp of the Martin™ MAC TW1™.
- **Square law** – light intensity control is finer at low levels and coarser at high levels.
- **Inverse square law** – light intensity control is coarser at low levels and finer at high levels.

• **DMX LAMP OFF** and **DMX RESET** define whether the lamp can be powered off, or whether fixture or individual effects can be reset by sending a DMX command on channel 26 in 16-bit mode or 29 in 16-bit extended mode. If either of these settings are set to **OFF**, you can override this setting and cut lamp power or execute resets anyway by applying a special combination of DMX values (see "MAC III Profile DMX protocol" on page 37).

• **DMX PORT** and **RDM PORT** alter the default use of the 5-pin XLR data in and out connectors. Port 1 uses pins 2 and 3, and Port 2 uses pins 4 and 5 in the connectors. By default, Port 1 carries DMX and Port 2 RDM signals, but you can reassign the ports here.

• **DMX TERMINATION** terminates the DMX link internally, eliminating the need for a DMX termination plug in the fixture's data output connector. Set it to **On** in the last fixture on the DMX link.

• **PARAMETER SHORTCUTS** determines whether the gobo wheels and color wheel take the shortest path between two positions (shortcuts enabled), crossing the open position if necessary, or always avoid the open position (shortcuts disabled).

• **DISPLAY** determines whether the display remains on permanently, or goes into sleep mode 2, 5 or 10 minutes after the last movement of the jog wheel or Escape button.

• **DISPLAY INTENSITY** lets you define the brightness of the backlit graphic display. Select **Auto** for automatic adjustment to match the ambient light level, or manually set the intensity to a level from 0% to 100%.

• **DISPLAY ROTATION** rotates the display through 0°, 90°, 180° or 270° so that it can be read easily no matter how the fixture is oriented.

• **ERROR MODE** enables or disables error warnings. If set to **Normal**, the display is activated and lights up if the fixture needs to report an error. If set to **Silent**, the fixture does not light the display with error warnings but error messages can still be read when the display is activated manually.

Factory settings

FACTORY SETTINGS lets you restore the fixture's default setup options. Effect calibration is not affected, so any effects that have been re-calibrated will not be returned to factory calibration settings.

Fixture information readouts

The following fixture information can be called up in the display:

- **FIRMWARE VERSION** and **FIRMWARE REVISION** display the currently installed fixture software version and revision.

- **FIXTURE MAC ID** displays the fixture's factory-set MAC (Media Access Control) address.

- **RDM UID** displays the fixture's factory-set unique ID for identification in RDM systems.

- **POWER ON TIME** provides two counters:
  - The **TOTAL POWER ON** counter is not user-resettable and displays total hours powered on since manufacture.
  - The **RESETTABLE POWER ON** counter is user-resettable and displays the number of hours the fixture has been powered on since the counter was last reset.

- **LAMP ON TIME** provides two counters:
  - The **TOTAL LAMP ON** counter is not user-resettable and displays total hours the lamp has been powered on since manufacture.
  - The **RESETTABLE LAMP ON** counter is user-resettable and displays the number of hours the lamp has been powered on since the counter was last reset.

- **LAMP STRIKES** provides two counters:
  - The **TOTAL LAMP STRIKES** counter is not user-resettable and displays the total number of lamp strikes since manufacture.
  - The **RESETTABLE LAMP STRIKES** counter is user-resettable and displays the number of lamp strikes since the counter was last reset.

- **AIR FILTERS** provides an alert feature for service interventions:
  - The **RESETTABLE AIR FILTER** counter displays the total number of hours the fixture has been powered on since the alert timer was last cleared.
  - **SET TIME ALERT** lets you set the number of hours from **1** to **750** you want the fixture to be powered on before a service alert appears in the display. If you set this figure to **0**, the time alert is disabled.
  - **CLEAR RESETTABLE AIR FILTER** lets you reset the resettable air filter counter to zero after completing service work.

DMX signal monitoring

The MAC III Profile provides data on the DMX signal it is receiving in the **DMX LIVE** menu. This information can be useful for troubleshooting control problems.

RATE displays the DMX refresh rate in packets per second. Values lower than 10 or higher than 44 may result in erratic performance, especially when using tracking control.

QUALITY displays the quality of the received DMX data as a percentage of packets received. Values much below 100 indicate interference, poor connections, or other problems with the serial data link that are the most common cause of control problems.

START CODE displays the DMX start code. Packets with a start code other than 0 may cause irregular performance.

The remaining options under **DMX LIVE** display the DMX values in a range from 0 - 255 that are being received on each channel. The DMX channels shown will depend on whether the fixture is in 16-bit or 16-bit extended mode.
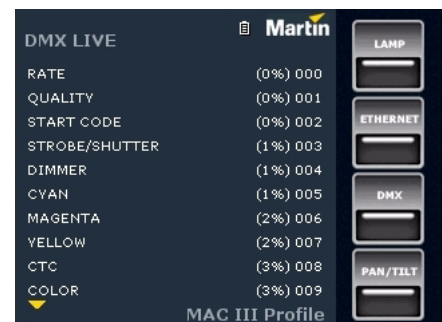
Test sequence

TEST SEQUENCE activates all effects in sequence, allowing you to test them quickly without a DMX controller.

The sequence can be started, paused, stopped and set to repeat.

Status readouts for the test sequence are given below the **ACTION** and **REPEAT** commands.

TEST SEQUENCE	🗆 **Martin**
ACTION	Start
REPEAT	Off
STATUS	Stopped
SCENE TEXT	no text
CURRENT SCENE	0
NO OF SCENES	0
CHANNELS	0
ELAPSED	0.0 sec.
DURATION	0.0 sec.
	MAC III Profile
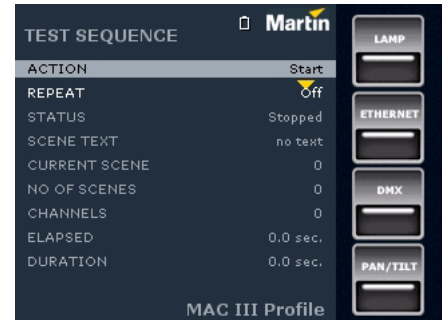
Manual control

The **MANUAL CONTROL** menu lets you move effects manually and execute commands on the **FIXTURE CONTROL** and **FIXTURE ADJUSTMENT** DMX channels without a DMX controller.

To execute commands on the **FIXTURE CONTROL** and **FIXTURE ADJUSTMENT** DMX channels, select either **FIXTURE CONTROL** or **FIXTURE ADJUSTMENT,** then select a value from 0 to 255. The commands available are listed in the DMX protocol on pages 41 and 42.

MANUAL CONTROL	🗎 **Martin**
GOBO ANI INDX	(0%) 000
BEAM EFFECT	(0%) 000
BEAM EFFECT INDX.	(0%) 000
IRIS	(0%) 000
FOCUS	(0%) 000
ZOOM	(0%) 000
PAN	(50%) 128
TILT	(50%) 128
FIXTURE CONTROL	(0%) 000
FIXTURE ADJUSTMENTS	(0%) 000
	MAC III Profile
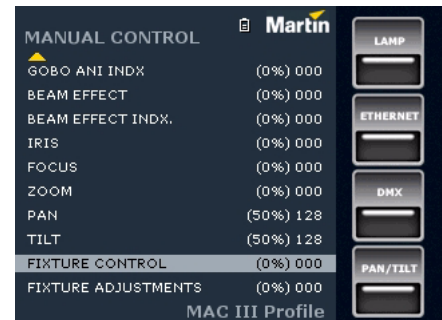
Setup Wizard menu

The **SETUP WIZARD** menu gives quick access to the most frequently required items in the other menus.

SETUP WIZARD	🗆 **Martin**
FACTORY SETTINGS	
DMX ADDRESS	1-27
PROTOCOL SET	16 Bit
FIXTURE ID	0000
PAN/TILT SETTINGS	Normal
DIMMING CURVE	Optical linear
	MAC III Profile

Effects

This section gives details of the effects and settings that can be controlled via DMX. See "MAC III Profile DMX protocol" on page 37 for details of the channels used to control them.

Where fine control is available, the main control channel sets the first 8 bits (the most significant byte or MSB), and the fine channels set the second 8 bits (the least significant byte or LSB) of the 16-bit control byte. In other words, the fine channel works within the position set by the coarse channel.

Shutter and strobe effects

The MAC III Profile's mechanical shutter provides regular or random strobe and pulse effects with variable speed from 2 Hz to 10 Hz approximately.

To ensure total blackout, the mechanical dimmer also deploys if the shutter is closed for more than 5 seconds.

Dimming

The MAC III Profile's mechanical dimmer provides smooth, high-resolution 100 percent fading.

Fine control of the dimmer is available in 16-bit extended mode.

To ensure total blackout, the mechanical shutter also deploys if the dimmer is reduced to 0% for more than 5 seconds.

Cyan, Magenta, Yellow and CTO

The amount of cyan, magenta, yellow and CTO (color temperature control orange) applied to the MAC III Profile's light output can be varied from zero to 100%.

Color wheel

The color wheel has 7 color filters that can be applied as split colors or in full-color steps. The color wheel can also be scrolled continuously, applying the color filters in sequence with control of color wheel speed and direction. Color filters can also be applied at random at fast, medium or slow speed.

Rotating gobos

The two rotating gobo wheels each have five rotating gobos that can be selected, indexed (positioned at an angle), rotated continuously, and shaken (bounced). The gobo wheels can also be scrolled continuously or shaken. Indexing, continuous gobo rotation, gobo shake and continuous gobo wheel scrolling are selected on one channel for each gobo wheel. Depending on what is selected on this first channel for each gobo wheel, the indexed angle or rotation speed are set on the next channel. If gobo indexing is selected on the first channel, fine control of gobo index angle is available on the third gobo wheel control channel for each gobo wheel in both 16-bit and 16-bit extended modes.

Gobo animation

The gobo animation system lets you create animated effects by rotating the animation wheel and masking the resulting pattern with one (or even two) gobos.

The system uses two channels:

- On the first channel, you set the animation wheel so that its pattern is horizontal, vertical or set at an indexed angle, with the animation wheel either static or rotating.
- On the second channel, you can either set the indexed angle of the animation wheel pattern (if you have set the animation wheel to a static position on the first channel), or set the animation wheel direction and speed (if you have selected rotation on the first channel).

When projecting onto a surface or stage, setting the pattern to horizontal with very slow rotation can simulate windswept clouds, for example, and setting the pattern close to vertical with faster rotation can simulate flames. Adjust the fixture's focus to obtain the most realistic results.

The animation wheel can also give mid-air and linear projection effects that are different from rotating gobo effects in that they do not rotate around a center axis.

Beam effect (rotating prism)

The four-facet prism can be applied at indexed angles or rotated with variable direction and speed.

Iris

The iris can be set to a static diameter, or regular and random pulsing effects can be set with variable speed.

Focus and zoom

The focus lens focuses the beam from approximately 2 meters (6.5 feet) to infinity.

The separate zoom lens varies the focused beam angle from 11.5° to 55° with the standard lens installed.

Zoom/focus linking

Focus can be linked to zoom so that it automatically adjusts to match changes in zoom angle. Focus on rotating gobos matches zoom closely, while focus on the gobo animation wheel matches zoom best in the center of the zoom range and slightly less precisely at the two extremes of the zoom range.

Linked zoom/focus works within 3 distance ranges:

• Near (5 - 10 meters)
• Medium (10 - 20 meters)
• Far (20 meters - infinity)

To link zoom and focus, select a distance range using the Fixture control settings DMX channel or the **PERSONALITY** menu in the control panel. Then adjust focus to obtain the required degree of sharpness. Linking is now enabled and focus will auto-adjust.

Pan and tilt

Coarse and fine pan and tilt control are available in both 16-bit and 16-bit extended modes.

Maximum and minimum pan and tilt limits can be set using the control panel (see "Personality – tailoring performance" on page 16).

DMX fixture control and adjustment settings

Fixture control via DMX

Certain fixture settings and parameters can be adjusted from the DMX controller on DMX channel 26 in 16-bit mode or DMX channel 29 in 16-bit extended mode.

Commands sent via DMX override any settings entered in the fixture's onboard control menus. However, to reset the fixture, reset individual effects or cut power to the lamp via DMX if **DMX Reset** or **DMX Lamp Off** are disabled in the control menus, the following conditions must be met:

- Slot 1 must be selected on the color wheel (DMX value 20 on channel 7 in 16-bit mode or 8 in 16-bit extended mode),
- the prism must be on (DMX value 80-89 on channel 17 in 16-bit or channel 18 in 16-bit ext.), and
- open gobo must be selected on both gobo wheels (DMX value 0 on channels 8 and 9 in 16-bit or channels 11 and 12 in 16-bit ext.).

Note also that a lamp off command sent by DMX must be applied for 5 seconds before it executes.

These requirements are a safeguard to help you avoid resetting the fixture or powering the lamp off accidentally.

Resetting

Either the entire fixture or individual effects can be reset to their initial positions. Resetting individual effects can allow on-the-fly recovery if an effect loses its correct position, for example, without having to reset the entire fixture.

Lamp on / off

The lamp can be struck and doused from the DMX controller.

A peak of electric current that is many times the operating current is drawn for a fraction of a second when striking a discharge lamp. Striking many lamps at once may cause a voltage drop large enough to prevent lamps from striking or draw enough current to trip electronic circuit breakers. If sending lamp-on commands to multiple fixtures, program a sequence that strikes lamps one at a time.

Control menu setting overrides

The following fixture settings can be adjusted, overriding the settings entered in the onboard control menus:

- Dimming curve
- Effects shortcuts

See under "Control panel operations" on page 14 for details of these parameters.

Focus tracking

To set up focus tracking so that focus automatically adjusts to match different zoom angles, adjust focus to sharp or soft as required with the zoom in the middle of its range, then activate one of the 3 zoom-focus tracking zones on the Fixture Control settings DMX channel.

Adjusting lamp power

If full light output is not required, the power supplied to the lamp by the ballast can be reduced to 90%, 80%, 70% or 60% of full power level. Reducing lamp power reduces heat output and therefore reduces noise from the cooling fans. It also reduces power consumption, and it helps reduce the gradual fall in output that occurs over the lifetime of a discharge lamp. To restore full power to the lamp, a Lamp On command must be sent.

If the shutter and/or dimmer are closed for longer than 10 seconds, lamp power is automatically switched to 60% of full power. When the shutter is opened again, the lamp returns to full power.

Illuminating the display

The fixture's display panel can be brought out of sleep mode with a DMX command. This makes it possible to read the fixture's DMX address while the fixture is installed in the rig.

After being illuminated in this way, the display will return to sleep mode according to the setting entered in the onboard control menus.

Fixture adjustment via DMX

The fixture adjustment DMX channel allows effects to be adjusted and settings stored in the fixture from the DMX controller.

To adjust an effect:

1. Set the effect to a DMX value from 0 to 255 on its own DMX channel (for example, set Cyan to 192 on channel 3 in 16-bit mode or 4 in 16-bit extended mode).
2. Send a 'Store' command for the effect on the DMX Adjustment channel (for example, send DMX value 130-134 on channel 27 in 16-bit mode or 30 in 16-bit extended mode to store the Cyan adjustment).

The MAC III Profile now reads the value on the effect channel (192 for Cyan in the example above), translates it to an adjustment value of between -5% and +5% as shown in Figure 12 (+2.5% Cyan adjustment in the example above) and stores that adjustment.

Effect adjustment stored in memory is unaffected by powering the fixture off and on.

See "Fixture Adjustment settings" in the DMX protocol on page 42 for details of the effects that can be adjusted using this method.

Figure 12: Effect adjustment values
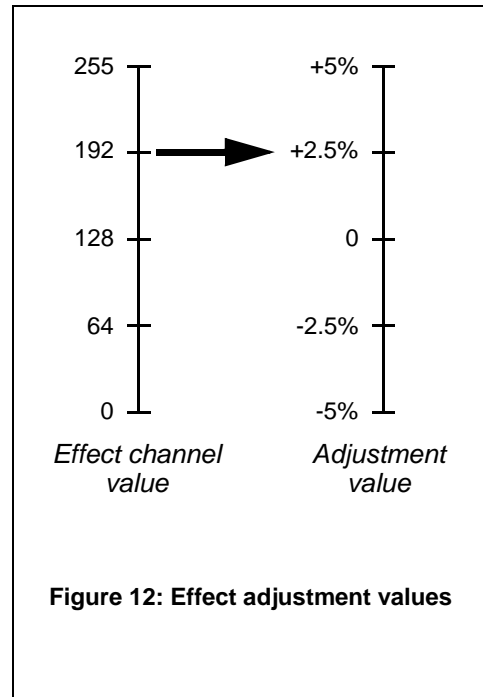
Optical configuration

Color wheel

The MAC III Profile features a color wheel with 7 interchangeable dichroic color filters and an open position. As standard the MAC III Profile is supplied with the following color filters:

- Slot 1 - Blue 101 - P/N 46404500
- Slot 2 - Green 203 - P/N 46404510
- Slot 3 - Orange 311 - P/N 46404520
- Slot 4 - Minus green - P/N 46404540
- Slot 5 - Yellow 610 - P/N 46404530
- Slot 6 - Congo - P/N 46404550
- Slot 7 - Red 310 - P/N 46404560
- Slot 8 - Open

The DMX Protocol on page 37 gives details of color filter selection.

Animation wheel

The MAC III Profile is supplied with the "Tribal waves" gobo animation wheel (P/N 62325143) installed. See under "Specifications" on page 50 for full details of this component. Additional stock patterns will be available as accessories from Martin dealers.

Figure 13: Tribal waves gobo animation wheel

Gobos

The two gobo wheels in the MAC III Profile each provide 5 rotating gobos plus an open position. The standard gobos are shown in the correct order in Figure 14 on page 25.

All gobos are interchangeable, but replacement gobos must match the dimensions, construction and quality of the gobos supplied as standard (see under "Specifications" on page 50).

The use of metal gobos in the MAC III Profile is not recommended.

Do not use gobos with dark coatings on any side, as these will absorb heat – either directly from the lamp or reflected back from other gobos and optical components – and will not be durable.

Rotating gobo wheel 1
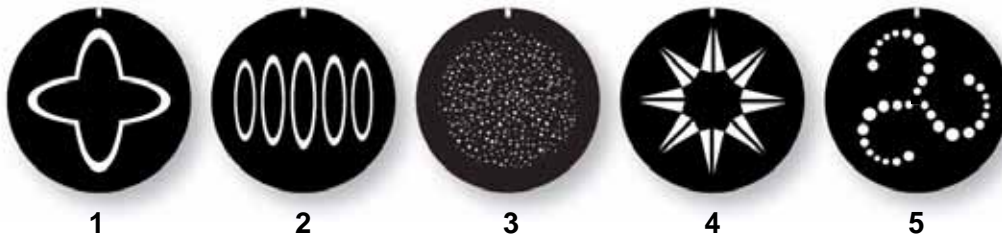
Rotating gobo wheel 2

Gobo wheel 1
1. 4-D cone .... P/N 43042039
2. 5 circles in line .... P/N 43042040
3. Snow storm...................... P/N 43042050
4. Spikes .... P/N 43042042
5. Pin wheel .... P/N 43042043

Gobo wheel 2
1. Lasercone single.............. P/N 43042053
2. Mikado .... P/N 43042045
3. Limbo/Crystal (in holder).. P/N 62325128
4. Cloud flames.................... P/N 43042046
5. Gridlock (in holder) .... P/N 62325145

Figure 14: Rotating gobos in gobo wheels 1 and 2

RDM

The MAC III Profile can communicate with RDM (Remote Device Management) devices.

RDM communication

The MAC III Profile running firmware version 1.0.0 will respond to the following basic mandatory RDM requests:

- RDM_DISCOVERY_COMMAND
- RDM_DISC_MUTE
- RDM_DISC_UNMUTE
- RDM_DEVICE_INFO (get)
- RDM_SOFTWARE_VERSION_LABEL (get)
- RDM_DMX_START_ADDRESS (get/set)
- RDM_IDENTIFY_DEVICE (get/set)

RDM port

By default, the MAC III Profile sends and receives RDM signals via Port 2 (the data 2 pins) in the 5-pin XLR sockets used for data in/out. The default port setup can be changed using the control panel.

Service and maintenance

Warning! Disconnect the fixture from power and allow to cool for 2 hours 45 minutes before removing any cover.

Important! Excessive dust, smoke fluid, and particulate buildup degrades performance, causes overheating and will damage the fixture. Damage caused by inadequate maintenance is not covered by the warranty.

This section lists service and maintenance operations that may be carried out by the user. Refer any operation that is not described here to a qualified Martin technician.

The MAC III Profile requires routine cleaning. The schedule depends heavily on the operating environment. It is essential to follow the cleaning guidelines given later in this section.

Tilt lock

Important! **Release the tilt lock before operating the fixture.**

The tilt position of the head can be locked at various angles for transportation or service. Push the lock in towards the yoke in one direction to lock the head and back in from the other side to unlock the head.

There is no pan lock on the MAC III Profile.
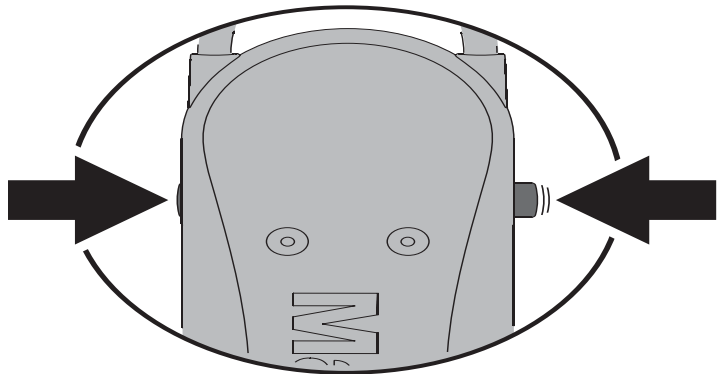
Figure 15: Tilt lock

Service utilities

The **SERVICE** menu in the main menu provides utilities for technicians rigging or servicing the fixture:

- **ADJUST** is for service use only and provides a means of adjusting dimmer flags relative to each other.

Important! *Do not attempt to adjust dimmer flags without service documentation from Martin.*

- **CALIBRATION** sets effects to their factory default positions or lets you set new default positions for calibration purposes. See "Calibrating effects" later in this chapter for full details.
- **UPDATE FIRMWARE**, updates the firmware (fixture software) if a USB memory device with a suitable firmware file is connected to the USB port. For a detailed guide to updating the firmware, see "Software installation" later in this chapter.
- When you select **PAN/TILT SENSOR CALIBRATION**, a display message appears asking you to move pan and tilt to their end stop positions. To calibrate pan and tilt:

1. Move pan to its end stop position by rotating the yoke *clockwise* (as seen from above the head looking down at the base) to maximum pan.
2. Move tilt to its end stop by tilting the head to its maximum angle with the front glass pointing away from the display panel.
3. Press the jog wheel to register the positions. The fixture will display **Saving...**

Warning! *As soon as you exit pan/tilt sensor calibration, the head will move to its original position.*

4. Make sure that you are ready for the head to move, then press the Escape button to exit pan/tilt sensor calibration. The head will now pan and tilt back to where it was before you entered calibration mode.

Calibrating effects

The calibration menu lets you define offsets in software that are relative to the mechanical reset or home positions. This allows you to fine-tune optical alignment and achieve uniform performance between fixtures. Dimmer and zoom are calibrated to defined points. The other effects are calibrated relative to an arbitrary reference fixture.

A calibration range of +/- 5% is available for each effect. After selecting a calibration value, click on the jog wheel to set the effect to that value.

SAVE FACTORY DEFAULT lets you replace the factory default calibration settings stored in memory with any new settings you have configured.

LOAD DEFAULTS lets you load the factory default settings – or any new settings you have replaced them with if you have used the **SAVE FACTORY DEFAULT** command.

Software installation

The currently installed firmware (fixture software) version can be viewed under **FIXTURE INFORMATION** in the main menu.

Firmware updates are available from the Martin website and can be installed using a memory device inserted in the MAC III Profile's USB port.

The following are required in order to install firmware.

• The MAC III Profile firmware update file, available for download from the User Support Area of the Martin website at http://www.martin.com.

• A USB memory storage device with the MAC III Profile firmware update file copied from a PC into the memory device's root directory.

Installing software

To install the MAC III Profile firmware:

1. Download the firmware from the MAC III Profile support page on the Martin website at www.martin.com
2. Read the firmware release notes to check for any instructions or warnings.
3. Copy the firmware file to the root directory of a USB memory device.
4. Disconnect the MAC III Profile from the data link and insert the USB memory device in the fixture's USB host socket.
5. Scroll to the **UPDATE FIRMWARE** menu under **SERVICE** in the control panel and select **BANK**. The firmware versions present on the USB memory device and in the fixture's internal memory are listed. Scrolling up and down shows the versions present. **LOCATION** indicates where the firmware is located (either USB device or internal memory).
6. If you select a firmware version on the USB device and click the jog wheel, the firmware is downloaded to internal memory, where it be available for future firmware updates. The firmware is then unpacked and will be installed when the fixture is powered off and then on again.
7. Remove the USB memory device, reconnect the MAC III Profile to the data link and power the fixture off and on again. The newly installed firmware version will now be displayed in the **FIXTURE INFORMATION** menu.
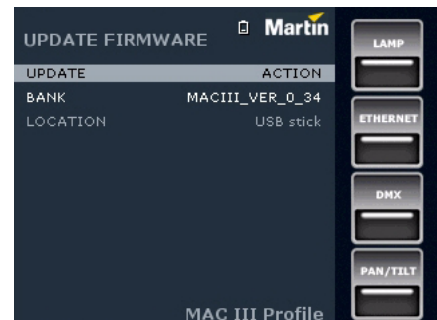
If necessary, reconfigure any custom settings that may have been overwritten by the new software.

Cleaning

Regular cleaning is very important for fixture life and performance. Buildup of dust, dirt, smoke particles, fog fluid residues, etc. degrades the fixture's light output and cooling ability.

Cleaning schedules for lighting fixtures vary greatly depending on the operating environment. It is therefore impossible to specify precise cleaning intervals for the MAC III Profile. Cooling fans suck in airborne dust and smoke particles, and in extreme cases fixtures may require cleaning after surprisingly few hours of operation. Environmental factors that may result in a need for frequent cleaning include:

• Use of smoke or fog machines.

• High airflow rates (near air conditioning vents, for example).

- Presence of cigarette smoke.
- Airborne dust (from stage effects, building structures and fittings or the natural environment at outdoor events, for example).

If one or more of these factors is present, inspect fixtures within their first 25 hours of operation to see whether cleaning is necessary. Check again at frequent intervals. This procedure will allow you to assess cleaning requirements in your particular situation. If in doubt, consult your Martin dealer about a suitable maintenance schedule.

Use care when cleaning optical components and work in a clean, well lit area. The coated surfaces are fragile and easily scratched. Do not use solvents that can damage plastic or painted surfaces.

Cleaning and replacing the air filters

1. Disconnect the fixture from power and allow the components to cool for 2 hours 45 minutes.
2. See Figure 16. On each side of the head, use a flat-bladed screwdriver to lever the front edge of each filter holder away from the head and pull the filter holders forwards to unclip and remove them.
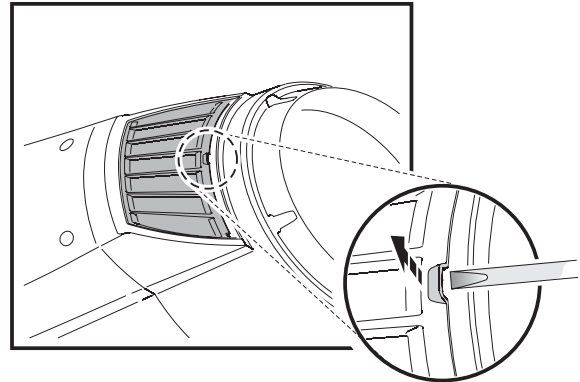
Figure 16: Removing head air filters

3. See Figure 17. On each side of the base, pinch the air filter holders in from the sides as illustrated, then pull the center of the holders outwards to unclip and remove them.
4. Clean the air filter elements. If they are saturated with smoke fluid, soak them in warm, soapy water and blot dry. If the filters cannot be cleaned completely or are not in perfect condition, replace them with new items.
5. Pinch the base filter holders in from the side and engage the ends of the filter holders their slots to clip them back into position.
6. See Figure 18. Engage the three tabs in the head filter holders in their slots in the head, pinch the foremost corners of the filter holder together slightly and press them into the head to clip them back into position.
7. Check that all filter holders are correctly installed so that there is an airtight seal around all their edges.
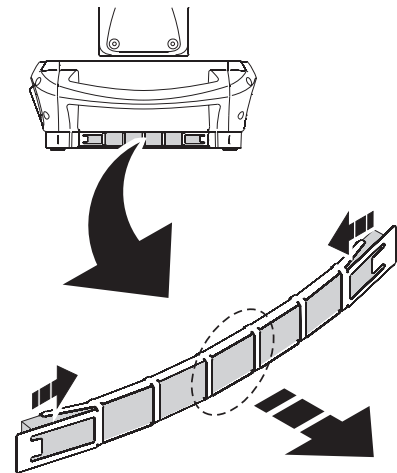
Figure 17: Base air filters
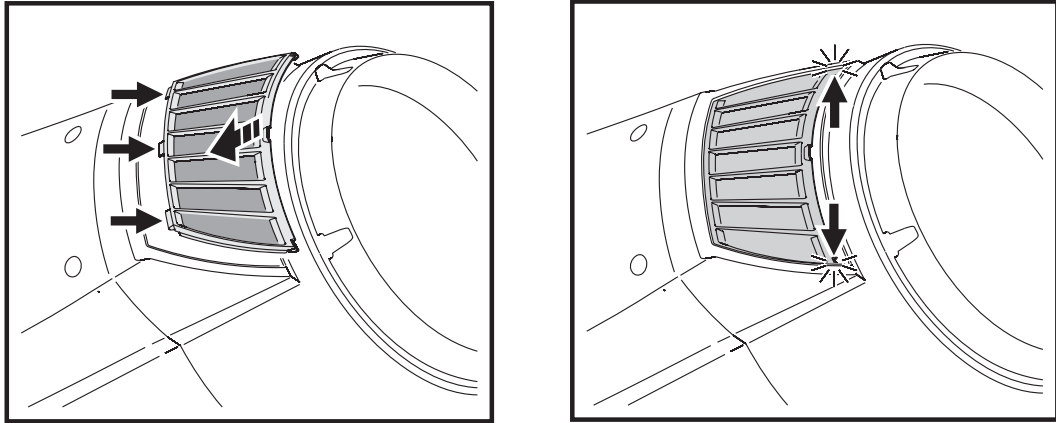
Figure 18: Reinstalling head air filters

Cleaning the fixture

To clean the head:

1. Disconnect the fixture from power and allow the components to cool for 2 hours 45 minutes.
2. Remove both head covers by loosening their quarter-turn retaining screws (see Figure 19).
3. Vacuum or gently blow away dust and loose particles inside the head with compressed air.
4. Carefully clean the optical components. Remove smoke and other residues with cotton swabs or unscented tissues moistened with isopropyl alcohol. A commercial glass cleaner may be used, but residues must be removed with distilled water. Clean with a slow circular motion from center to edge. Dry with a clean, soft and lint-free cloth or compressed air. Remove stuck particles with an unscented tissue or cotton swab moistened with glass cleaner or distilled water. Do not rub the surface: lift the particles off with a soft repeated press.
5. Remove dust from fans and air vents with a soft brush, cotton swab, vacuum, or compressed air.
6. Reinstall the head covers.
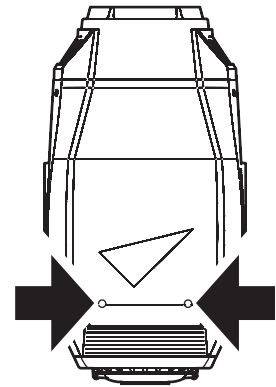
Figure 19: Head cover screws

Lubrication

The MAC III Profile does not require lubrication under normal circumstances. The slides for the zoom and focus lens cars are lubricated with a long-lasting teflon-based grease that can be reapplied by a Martin service partner if necessary.

Replacing a color filter

Note: Wear cotton gloves while handling color filters and use only genuine Martin filters.

1. Power the lamp off but leave the fixture powered on with fans running and allow it to cool.
2. The top of the head is *above* the text on the lamp cover. Lock the head in a convenient position for access to the top of the head.
3. Remove the two quarter-turn retaining screws (see Figure 19) from the top cover and lift it away from the head. Let the cover hang on its safety wire or unclip the safety wire and remove the cover completely.
4. See **A** in Figure 20. Rotate the color wheel until the filter you want to change is accessible. Lift the filter away from the color wheel slightly to release it, then grasp it by the edges and remove. If your fingers are too large, protect the glass with a piece of paper that has been folded several times and grasp the filter with needle nose pliers.
5. To insert a filter, slide it under the retention spring until it snaps into place.

6. If no further service work is to be carried out, reinstall the top cover with its safety wire and release the tilt lock.
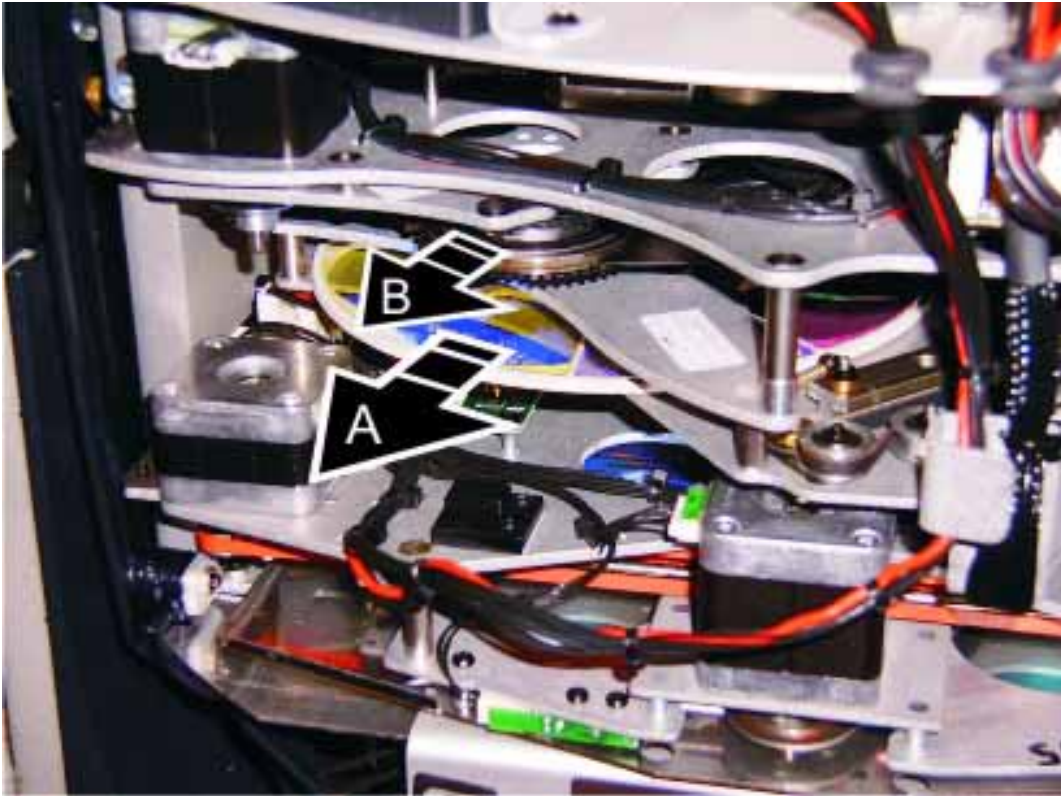
Figure 20: Color filter and gobo replacement

Replacing rotating gobos

Important!   ***The gobo can fall out if the spring is inserted backwards.***

To replace a gobo:

1. Open the top cover as described under "Replacing a color filter" on page 30.
2. See **B** in Figure 20 and see Figure 22 on page 32. Rotate the relevant gobo wheel until the gobo you want to replace is accessible.
3. Grasp the holder by the teeth and pull the holder lightly away from the gobo wheel to release the holder and remove it from the wheel.
4. With a small screwdriver or similar, unhook the end of the gobo spring furthest from the gobo and pull out the spring. Drop the gobo out of the holder.

Figure 21: Rotating gobo holder

5. Insert the new gobo in the holder with the side that faces towards the lamp facing upwards, towards the spring (see Figure 23 and Figure 21).
6. Insert the spring with the narrow end against the gobo, as shown in Figure 21. To identify the narrow end, press the spring flat: the narrow end is on the inside. Push the end of the spring in under the lip of the holder.
7. Check that the gobo is seated flush against the holder. Press the spring as flat as possible against the back of the gobo.
8. Check that the goboholder is the right way up (see Figure 22), then work the rim of the gobo holder under both clips and snap the gobo holder back into position on the gobo wheel. If necessary, a small screwdriver or similar tool may be used to pry the clips away from the wheel.

9. If no further service work is to be carried out, reinstall the top cover with its safety wire and release the tilt lock.

Figure 22: Gobo replacement

MAC III Profile user manual

Gobo orientation in the MAC III Profile

The orientations shown in Figure 23 are correct in most cases, but consult your Martin dealer or gobo supplier if you are in any doubt about the orientation of a specific gobo type.

Coated Glass Gobos

The heavy matted aluminum coated borosilicate gobos in the MAC III Profile are factory-installed with the more reflective sides facing towards the lamp. Replacement gobos must also be installed with more reflective sides facing the lamp in order to avoid heat damage.

More reflective side towards lamp

Less reflective side away from lamp
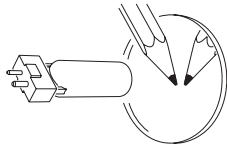
To minimize the risk of gobo overheating and damage, turn the more reflective side of a coated gobo towards the lamp.
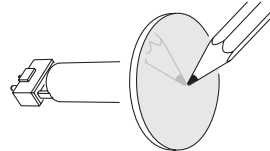
The less reflective side of a coated gobo will absorb less heat if it faces away from the lamp.

Textured Glass Gobos

Textured side towards lamp

Smooth side away from lamp
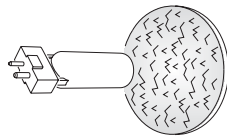
Textured glass gobos in the MAC III Profile sit most squarely in the gobo wheel with the textured side towards the lamp. If in doubt, consult your Martin dealer or gobo supplier.
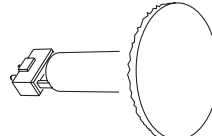
Image / text Gobos

True image towards lamp
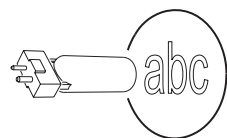
Reversed image away from lamp
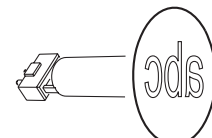
Figure 23. Correct gobo orientation

Replacing the gobo animation wheel

Important! *The gobo animation wheel is glass and must be handled gently. Do not attempt to bend it or you will break it. Breakages caused by mishandling are not covered by the product warranty.*

1. Disconnect the fixture from power and allow it to cool for 2 hours 45 minutes.
2. Apply the tilt lock in a convenient position. Open the top cover as described under "Replacing a color filter" on page 30.
3. See Figure 24. Bring the animation wheel up to the top of the head by pulling its sliding car with a finger.

Figure 24: Animation wheel access

4. The animation wheel is retained by a magnetic hub. To avoid breaking the animation wheel while removing, release the hub by gently levering the hub off its mounting with a screwdriver. Do not apply pressure to the animation wheel itself. See Figure 25. Once the hub is released, you can safely grasp the wheel and remove it.
5. When installing an animation wheel, slide the hub in over the drive mechanism and align it with its mounting until the magnetic hub locks into place on the mounting.
6. If no further service work is to be carried out, reinstall the top cover with its safety wire and release the tilt lock before re-applying power.

Figure 25: Animation wheel removal

Removing modules

The MAC III Profile is modular in design. A full procedure for removing and servicing effect modules is included in the Martin™ service package available for the MAC III Profile.

Important!   ***The zoom/focus car and animation wheel must be moved to the positions described below before modules can be removed.***

1. See Figure 26. Move the zoom/focus car as far as possible towards the front lens by first pushing on one of its sliders (**A**), then holding it in the fully forward position by pressing on one of its drive belt pulleys (**B)**.

2. Move the gobo animation wheel as far as possible up towards the top of the head by pulling on its drive car as shown in Figure 24 on page 34. The animation wheel is glass. Do not apply pressure to it, or you may cause damage that is not covered by the product warranty.

3. Modules are released for removal by disconnecting their multi-connectors and removing their retaining screws (arrowed in Figure 27). Take great care not to damage wiring during module removal or re-installation.
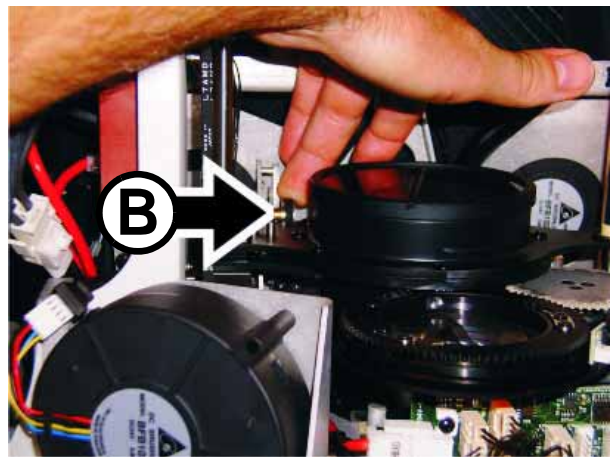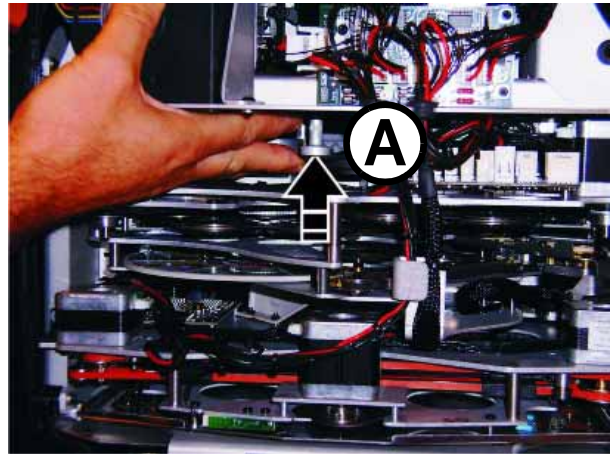
Figure 26: Moving the zoom/focus car fully forward

Figure 27: Module retaining screws

MAC III Profile DMX protocol

Firmware version: 1.0.0

Basic 16-bit Mode	16-bit Extended Mode	DMX Value	Percent	Function
1	**1**	0 - 19	0 - 7	**Strobe/shutter** Shutter closed (Lamp Switches to 800 watt mode after shutter is closed for 10 seconds)
		20 - 49	8 - 19	Shutter open
		50 - 64	20 - 25	Strobe, fast → slow
		65 - 69	26 - 27	Shutter Open
		70 - 84	28 - 33	Opening pulse, fast → slow
		85 - 89	34 - 35	Shutter Open
		90 - 104	36 - 41	Closing pulse, fast → slow
		105 - 109	42 - 43	Shutter Open
		110 - 124	44 - 49	Random strobe, fast → slow
		125 - 129	50 - 51	Shutter Open
		130 - 144	52 - 57	Random opening pulse, fast → slow
		145 - 149	58 - 59	Shutter Open
		150 - 164	60 - 65	Random closing pulse, fast → slow
		165 - 169	66 - 67	Shutter Open
		170 - 184	68 - 73	Burst pulse, fast → slow
		185 - 189	74 - 75	Shutter Open
		190 - 204	76 - 81	Random burst pulse, fast → slow
		205 - 209	82 - 83	Shutter Open
		210 - 224	84 - 89	Electronic sine wave strobe, fast → slow
		225 - 229	90 - 91	Shutter Open
		230 - 244	92 - 97	Electronic burst strobe, fast → slow
		245 - 255	98 - 100	Shutter Open
2	**2**	0 - 255	0 - 100	**Dimmer fade (MSB)** Closed → open
-	**3**	0 - 255	0 - 100	**Dimmer fade, fine (LSB)**
3	**4**	0 - 255	0 - 100	**Cyan (MSB)** White → full cyan
				Cyan range in random CMY color when random CMY selected on channel 14 (16-bit) or 15 (16-bit extended)
		0	0	Normal (full range)
		1 - 127	1 - 50	Minimum cyan setting (127 = full cyan)
		128 - 254	51 - 99	Maximum cyan setting (128 = no cyan)
		255	100	Normal (full range)
4	**5**	0 - 255	0 - 100	**Magenta (MSB)** White → full magenta
				Magenta range in random CMY color when random CMY selected on channel 14 (16-bit) or 15 (16-bit extended)
		0	0	Normal (full range)
		1 - 127	1 - 50	Minimum magenta setting (127 = full magenta)
		128 - 254	51 - 99	Maximum magenta setting (128 = no magenta)
		255	100	Normal (full range)
5	**6**	0 - 255	0 - 100	**Yellow (MSB)** White → full yellow
				Yellow range in random CMY color when random CMY selected on channel 14 (16-bit) or 15 (16-bit extended)
		0	0	Normal (full range)
		1 - 127	1 - 50	Minimum yellow setting (127 = full yellow)
		128 - 254	51 - 99	Maximum yellow setting (128 = no yellow)
		255	100	Normal (full range)
6	**7**	0 - 255	0 - 100	**CTO (MSB)** Open (cold) → warm

Basic 16-bit Mode	16-bit Extended Mode	DMX Value	Percent	Function
				Color Wheel
				Continuous Scroll
		0	0	Open
		1 - 19	1 - 7	Open → Slot 1 - Blue
		20	8	Slot 1
		21 - 39	9 - 15	Slot 1 → Slot 2 - Green
		40	16	Slot 2
		41 - 59	17 - 23	Slot 2 → Slot 3 - Orange
		60	24	Slot 3
		61 - 79	25 - 31	Slot 3 → Slot 4 - Minus green
		80	32	Slot 4
		81 - 99	33 - 39	Slot 4 → Slot 5 - Yellow
		100	40	Slot 5
		101 - 119	41 - 47	Slot 5 → Slot 6 - Congo (deep blue)
		120	48	Slot 6
		121 - 139	49 - 55	Slot 6 → Slot 7 - Red
		140	56	Slot 7
7	**8**	141 - 159	57 - 63	Slot 7 → Open
		160	64	Open
				Stepped Scroll (snap to full color positions)
		161 - 164	65 - 66	Slot 7 - Red
		165 - 168	67 - 68	Slot 6 - Congo (deep blue)
		169 - 172	69 - 70	Slot 5 - Yellow
		173 - 176	71 - 72	Slot 4 - Minus green
		177 - 180	73 - 74	Slot 3 - Orange
		181 - 184	75 - 76	Slot 2 - Green
		185 - 188	77 - 78	Slot 1 - Blue
		189 - 192	79 - 80	Open
				Continuous Rotation
		193 - 214	81 - 86	CW, Fast → Slow
		215 - 221	87 - 88	Stop (This will stop wherever the wheel is at the time)
		222 - 243	89 - 94	CCW, Slow → Fast
				Random color
		244 - 247	95 - 96	Fast
		248 - 251	97 - 98	Medium
		252 - 255	99 - 100	Slow
				Gobo wheel 1: gobo selection, indexing, shake, rotation
				Indexed gobo: set indexed angle on channel 9 (16-bit) or 10 (16-bit ext.)
		0 - 9	0 - 4	Open
		10 - 14	4 - 5	Gobo 1 - 4-D cone
		15 - 19	5 - 8	Gobo 2 - 5 circles in line
		20 - 24	8 - 10	Gobo 3 - Snow storm
		25 - 29	10 - 12	Gobo 4 - Spikes
		30 - 34	12 - 14	Gobo 5 - Pin wheel
				Continuous gobo rotation: set gobo rotation speed on channel 9 (16-bit) or 10 (16-bit ext.)
		35 - 39	14 - 16	Gobo 1 - 4-D cone
		40 - 44	16 - 18	Gobo 2 - 5 circles in line
8	**9**	45 - 49	18 - 20	Gobo 3 - Snow storm
		50 - 54	20 - 22	Gobo 4 - Spikes
		55 - 59	22 - 24	Gobo 5 - Pin wheel
				Gobo shake centered on indexed position: set indexed angle on channel 9 (16-bit) or 10 (16-bit ext.). Shake angle increments in following steps: 10°, 15°, 30°, 45°, 60°, 90°, 135°, 180°, 270° and 360°
		60 - 89	24 - 34	Gobo 1 - 4-D cone, 360° slow → 10° fast
		90 - 119	35 - 45	Gobo 2 - 5 circles in line, 360° slow → 10° fast
		120 - 149	46 - 56	Gobo 3 - Snow storm, 360° slow → 10° fast
		150 - 179	57 - 67	Gobo 4 - Spikes, 360° slow → 10° fast
		180 - 209	68 - 78	Gobo 5 - Pin wheel, 360° slow → 10° fast
				Continuous gobo wheel scroll with continuous gobo rotation: set gobo rotation speed on channel 9 (16-bit) or 10 (16-bit extended)
		210 - 232	79 - 89	CW scroll, fast → slow
		233 - 255	90 - 100	CCW scroll, slow → fast

Basic 16-bit Mode	16-bit Extended Mode	DMX Value	Percent	Function
9	**10**			**Gobo wheel 1: indexing, direction, speed (MSB)**
				If indexed gobo is selected on channel 8 (16-bit) or 9 (16-bit ext.)
		0 - 255	0 - 100	Rotating gobo indexing, 0 → 395°
				If continuous gobo rotation is selected on channel 8 (16-bit) or 9 (16-bit ext.)
		0 - 2	0	No rotation
		3 - 126	1 - 50	CW, fast → slow
		127 - 129	51	No rotation
		130 - 253	52 - 99	CCW, slow → fast
		254 - 255	100	No rotation
10	**11**			**Gobo wheel 1: rotating gobo fine indexing or rotation speed (LSB)**
				If indexed gobo is selected on channel 8 (16-bit) or 9 (16-bit ext.)
		0 - 255	0 - 100	Rotating gobo indexing, fine
				If continuous gobo rotation is selected on channel 8 (16-bit) or 9 (16-bit ext.)
		0 - 255	0 - 100	Rotating gobo rotation speed, fine
11	**12**			**Gobo wheel 2: gobo selection, indexing, shake, rotation**
				Indexed gobo: set indexed angle on channel 12 (16-bit) or 13 (16-bit ext.)
		0 - 9	0 - 4	Open
		10 - 14	4 - 5	Gobo 1 - Lasercone single
		15 - 19	5 - 8	Gobo 2 - Mikado
		20 - 24	8 - 10	Gobo 3 - Limbo/Crystal
		25 - 29	10 - 12	Gobo 4 - Cloud flames
		30 - 34	12 - 14	Gobo 5 - Gridlock
				Continuous gobo rotation: set gobo rotation speed on channel 12 (16-bit) or 13 (16-bit ext.)
		35 - 39	14 - 16	Gobo 1 - Lasercone single
		40 - 44	16 - 18	Gobo 2 - Mikado
		45 - 49	18 - 20	Gobo 3 - Limbo/Crystal
		50 - 54	20 - 22	Gobo 4 - Cloud flames
		55 - 59	22 - 24	Gobo 5 - Gridlock
				Gobo shake centered on indexed position: set indexed angle on channel 9 (16-bit) or 10 (16-bit ext.). Shake angle increments in following steps: 10°, 15°, 30°, 45°, 60°, 90°, 135°, 180°, 270° and 360°
		60 - 89	24 - 34	Gobo 1 - Lasercone single, 360° slow → 10° fast
		90 - 119	35 - 45	Gobo 2 - Mikado, 360° slow → 10° fast
		120 - 149	46 - 56	Gobo 3 - Limbo/Crystal, 360° slow → 10° fast
		150 - 179	57 - 67	Gobo 4 - Cloud flames, 360° slow → 10° fast
		180 - 209	68 - 78	Gobo 5 - Gridlock, 360° slow → 10° fast
				Continuous gobo wheel scroll with continuous gobo rotation: set gobo rotation speed on channel 9 (16-bit) or 10 (16-bit ext.)
		210 - 232	79 - 89	CW scroll, fast → slow
		233 - 255	90 - 100	CCW scroll, slow → fast
12	**13**			**Gobo wheel 2: indexing, direction, speed (MSB)** The default value for this channel = 128
				If indexed gobo is selected on channel 11 (16-bit) or 12 (16-bit ext.)
		0 - 255	0 - 100	Rotating gobo indexing, 0 → 395°
				If continuous gobo rotation is selected on channel 11 (16-bit) or 12 (16-bit ext.)
		0 - 2	0	No rotation
		3 - 126	1 - 50	CW, fast → slow
		127 - 129	51	No rotation
		130 - 253	52 - 99	CCW, slow → fast
		254 - 255	100	No rotation
13	**14**			**Gobo wheel 2: rotating gobo fine indexing or rotation speed (LSB)**
				If indexed gobo is selected on channel 11 (16-bit) or 12 (16-bit ext.)
		0 - 255	0 - 100	Rotating gobo indexing, fine
				If continuous gobo rotation is selected on channel 11 (16-bit) or 12 (16-bit ext.)
		0 - 255	0 - 100	Rotating gobo rotation speed, fine

Basic 16-bit Mode	16-bit Extended Mode	DMX Value	Percent	Function
14	**15**	0 - 18	0 - 6	**Color shake / random CMY** No effect (Note: this value is used for setting calibration values on ch. 27/30)
		19 - 57	7 - 22	Color wheel: fast narrow shake fast → slow wide shake, around currently selected color
				Random CMY: set min./ max. CMY range limits on channels 3 - 5 (16-bit) or 4 - 6 (16-bit ext.)
		58 - 83	23 - 32	Fast
		84 - 109	33 - 42	Medium
		110 - 135	43 - 52	Slow
		136 - 255	53 - 100	*Reserved for future use*
15	**16**	0 - 9	0 - 3	**Gobo animation wheel: position and function** Open
		10 - 19	4 - 7	Horizontal indexed position: set indexing on ch. 16 (16-bit) or 17 (16-bit ext.)
		20 - 29	8 - 11	Vertical indexed position: set indexing on ch. 16 (16-bit) or 17 (16-bit ext.)
		30 - 39	12 - 15	Horizontal position, continuous rotation: set direction & speed on ch. 16 (16-bit) or 17 (16-bit ext.)
		40 - 49	16 - 19	Vertical position, continuous rotation: set direction & speed on ch. 16 (16-bit) or 17 (16-bit ext.)
		50 - 139	20 - 54	Indexed angled position, horizontal → vertical: set indexing on ch. 16 (16-bit) or 17 (16-bit ext.)
		140 - 229	55 - 89	Angled position, vertical → horizontal, continuous rotation: set direction & speed on ch. 16 (16-bit) or 17 (16-bit ext.)
		230 - 255	90 - 100	*No function*
16	**17**			**Gobo animation wheel: indexed angled position, rotation direction and speed**
				If indexed angled position is selected on channel 15 (16-bit) or 16 (16-bit ext.):
		0 - 255	0 - 100	Indexed angle, 0°→ 395°
				If continuous rotation is selected on channel 15 (16-bit) or 16 (16-bit ext.):
		0 - 2	0	No rotation
		3 - 126	1 - 50	CW, fast → slow
		127 - 129	51	No rotation
		130 - 253	52 - 99	CCW, slow → fast
		254 - 255	100	No rotation
17	**18**	0 -19	0 - 7	**Beam effect (prism)** Beam effect off
		20 - 39	7 - 16	Beam effect 1 indexing: set angle on ch. 18 (16-bit) or 19 (16-bit ext.)
		40 - 59	17 - 24	Beam effect 1 rotating: set direction and speed on ch. 18 (16-bit) or 19 (16-bit ext.)
		60 - 79	25 - 29	Beam effect off
		80 - 255	30 - 100	Reserved for future use
18	**19**			**Beam effect (prism) indexing, direction, speed**
				If beam effect indexing is selected on channel 17 (16-bit) or 18 (16-bit ext.):
		0 - 255	0 - 100	Indexed angle 0° - 395°
				If beam effect rotation is selected on channel 17 (16-bit) or 18 (16-bit ext.):
		0 - 2	0	No rotation
		3 - 126	1 - 50	CW, fast → slow
		127 - 129	51	No rotation
		130 - 253	52 - 99	CCW, slow → fast
		254 - 255	100	No rotation
19	**20**	0 - 199	0 - 77	**Iris (MSB)** Open → closed
		200 - 215	78 - 84	Closed
		216 - 229	85 - 89	Opening pulse, fast → slow
		230 - 243	90 - 94	Closing pulse, fast → slow
		244 - 249	95 - 97	Random opening pulse, fast → slow
		250 - 255	98 - 100	Random closing pulse, fast → slow
20	**21**	0 - 255	0 - 100	**Focus (MSB)** Infinity → near
-	**22**	0 - 255	0 - 100	**Focus, fine (LSB)**
21	**23**	0 - 255	0 - 100	**Zoom (MSB)** Flood → spot
-	**24**	0 - 255	0 - 100	**Zoom, fine (LSB)**

Basic 16-bit Mode	16-bit Extended Mode	DMX Value	Percent	Function
22	**25**	0 - 255	0 - 100	**Pan (MSB)** Left → right (128 = neutral)
23	**26**	0 - 255	0 - 100	**Pan, fine (LSB)**
24	**27**	0 - 255	0 - 100	**Tilt (MSB)** Left → right (128 = neutral)
25	**28**	0 - 255	0 - 100	**Tilt, fine (LSB)**
26	**29**			**Fixture Control settings**
		0 - 9	0 - 1	*No function*
		10 - 14	2 - 3	Reset entire fixture[1]
		15 - 19	4 - 5	Reset dimmer and shutter only[1]
		20 - 24	6 - 7	Reset CMYC and color wheel only[1]
		25 - 29	8 - 9	Reset effects module (gobo wheels 1 & 2, gobo animation, iris, prism) only[1]
		30 - 34	10 - 11	Reset zoom and focus only[1]
		35 - 39	12 - 13	Reset pan and tilt only[1]
		40 - 44	14 - 15	*No function*
		45 - 49	16 - 17	Lamp on
		50 - 54	18 - 19	Lamp off [1, 2]
		55 - 59	20 - 21	*No function* (Note: this value is used for setting calibration values on ch. 27/30)
		60 - 64	22 - 23	Dimmer curve = **Optical linear** (menu override, setting unaffected by power off/on)[2]
		65 - 69	24 - 25	Dimmer curve = **Square law** (menu override, setting unaffected by power off/on)[2]
		70 - 74	26 - 27	Dimmer curve = **Inverse square law** (menu override, setting unaffected by power off/on)[2]
		75 - 79	28 - 29	Dimmer curve = **S-curve** (menu override, setting unaffected by power off/on)[2]
		80 - 139	30 - 53	*No function*
		140 - 144	54 - 55	Parameter shortcuts = **ON** (menu override, setting returns to default at power off/on)[2]
		145 - 149	56 - 57	Parameter shortcuts = **OFF** (menu override, setting returns to default at power off/on)[2]
		150 - 154	58 - 59	*No function*
		155 - 159	60 - 61	Disable zoom/focus linking[2]
		160 - 164	62 - 63	Enable zoom/focus linking, near distance[2]
		165 - 169	64 - 65	Enable zoom/focus linking, medium distance[2]
		170 - 174	66 - 67	Enable zoom/focus linking, far distance[2]
		175 - 199	68 - 77	*No function*
		200 - 204	78 - 79	Ballast output set to 100%
		205 - 209	80 - 81	Ballast output reduced, output set to 90%
		210 - 214	82 - 83	Ballast output reduced, output set to 80%
		215 - 219	84 - 85	Ballast output reduced, output set to 70%
		220 - 224	86 - 87	Ballast output reduced, output set to 60%
		225 - 239	88 - 93	*No function*
		240 - 244	94 - 95	Illuminate display on fixture[2]
		245 - 255	96 - 100	*No function*

[1] *If DMX Reset or DMX Lamp Off are disabled in the control menus, a full or partial reset command or a lamp off command can be executed only if:*
    Slot 1 is selected on the color wheel (DMX value 20 on channel 7 in16-bit or 8 in 16-bit ext.)
    The prism is on (DMX value 80-89 on channel 17 in 16-bit or 18 in 16-bit ext.), and
    Open gobo is selected on both gobo wheels (DMX value 0 on channels 8 and 9 in 16-bit or 11 and 12 in 16-bit ext.)

[2] *Value must be held for 5 seconds to activate*

Basic 16-bit Mode	16-bit Extended Mode	DMX Value	Percent	Function
				Fixture Adjustment settings
		0-79	0 -29	*No function: reserved for future use*
		80-84	30 - 31	Store pan lower limit
		85-89	32 - 33	Store pan upper limit
		90-94	34 - 35	*No function: reserved for future use*
		95-99	36 - 37	Store tilt lower limit
		100-104	38 - 39	Store tilt upper limit
		105-109	40 - 41	*No function: reserved for future use*
		110-114	42 - 43	Reset pan and tilt limits[3]
		115-124	44 - 47	*No function: reserved for future use*
		125-129	48 - 49	Store dimmer calibration[4]
		130-134	50 - 51	Store cyan calibration[4]
		135-139	52 - 53	Store magenta calibration[4]
		140-144	54 - 55	Store yellow calibration[4]
		145-149	56 - 57	Store CTC calibration[4]
		150-154	58 - 59	Store CMYC calibration[4]
		155-159	60 - 61	Store gobo wheel 1 slots 1 – 5 index calibration[4]
		160-164	62 - 63	*No function: reserved for future use*
		165-169	64 - 65	*No function: reserved for future use*
		170-174	66 - 67	*No function: reserved for future use*
		175-179	68 - 69	*No function: reserved for future use*
		180-184	70 - 71	Store gobo wheel 2 slots 1 – 5 index calibration[4]
		185-189	72 - 73	*No function: reserved for future use*
27	**30**	190-194	74 - 75	*No function: reserved for future use*
		195-199	76 - 77	*No function: reserved for future use*
		200-204	78 - 79	*No function: reserved for future use*
		205-209	80 - 81	Store gobo animation wheel index calibration[4]
		210-214	82 - 83	Store beam effect (prism) index calibration[4]
		215-219	84 - 85	Store iris calibration[4]
		220-224	86 - 87	Store focus calibration[4]
		225-229	88 - 89	Store zoom calibration[4]
		230-234	90 - 91	Store pan calibration[4]
		235-239	92 - 93	Store tilt calibration[4]
		240-244	94 - 95	*No function: reserved for future use*
		245-249	96 - 97	Reset all calibrations to factory default[4]
		250-255	98 - 100	*No function: reserved for future use*

[3] *To activate:*
 Value must be held for 5 seconds
 The CMY channels (3, 4 and 5 in 16-bit mode or 4, 5 and 6 in 16-bit extended mode) must all be set to DMX value 232
 The beam effect channel (17 in 16-bit mode or 18 in 16-bit extended mode) must be set to DMX value 30.

[4] *To activate:*
 Value must be held for 5 seconds
 Channel 14 in 16-bit/15 in 16-bit ext. must be set to DMX value 5 - 10
 Channel 26 in 16-bit/29 in 16-bit ext. must be set to 45 - 49.

MSB = Most significant byte

LSB = Least significant byte

Control panel menus

Menu	Item	Options	Notes (Default settings in bold print)
SETUP WIZARD			Gives quick access to most frequently/used menus: FACTORY SETTINGS, DMX ADDRESS, PROTOCOL SET, FIXTURE ID, PAN/TILT SETTINGS, PAN/TILT SPEED, PERFORMANCE MODE, FANS, DIMMING CURVE, AUTOMATICS LAMP ON. See table below for details of these settings.
DMX ADDRESS		**1** – **486** (16-bit) **1** – **483** (16-bit extended)	DMX address (new fixtures are supplied with address set to **1**)
PROTOCOL SET		**16 Bit**	**16-bit basic DMX mode** with 2-channel (coarse and fine) control of gobo rotation, pan, and tilt
		16 Bit Ext.	16-bit extended DMX mode with basic mode features plus fine control of dimmer, cyan, magenta, yellow, color wheel, iris, focus and zoom
FIXTURE ID		**0000 – 9999**	User-settable fixture ID number

Table 2: Control menus

Menu	Item	Options	Notes (Default settings in bold print)
PERSONALITY	**PAN/TILT SETTINGS**	**Normal**	**Normal pan and tilt control**
		Swap	Map DMX pan control to tilt channel and vice versa
		Pan invert	Reverse DMX pan control: right → left
		Tilt imvert	Reverse DMX tilt control: down → up
		P/T limit	Enable pan and tilt range limits (see settings in P/T LIMIT SETTINGS menu)
	P/T LIMIT SETTINGS	PAN MINIMUM	Set minimum pan angle (**0°** – 360°)
		PAN MAXIMUM	Set maximum pan angle (**360°** – 0°)
		TILT MINIMUM	Set minimum tilt angle (**-134°** – 134°)
		TILT MAXIMUM	Set maximum tilt angle (**134°** – -134°)
		P/T LIMIT AREA	Set pan/tilt to stay inside safe zone or outside no-go zone (**Inside**/Outside)
	LINKED ZOOM/FOCUS	**Disabled**/Near/ Medium/Far distance	Enables zoom focus linking in near, medium and long projection ranges.
	LAMP COOLING	50% / **80%**	Sets lamp cooling fans to 50% or 80% capacity (color temperature of light output from the lamp is different at different thermal lamp temperatures)
	FAN CLEAN MODE	Off	No fan cleaning.
		Auto	Fan cleaning mode activated automatically if fan error reported
		Forced	Fan cleaning: all fans run at 100%
	DIMMING CURVE	**Optical linear**	Optically linear dimming curve
		VRMS linear	S-curve (fixture emulates incandescent lamp voltage linear RMS dimming curve)
		Square law	Square law dimming curve
		Inv.sq.law	Inverse square law dimming curve
	DMX LAMP OFF	On/**Off**	Lamp can be powered off via DMX: enable/disable (can be overridden if disabled: see DMX protocol)
	DMX RESET	**On**/Off	Fixture can be reset via DMX: enable/disable (can be overridden if disabled: see DMX protocol)
	DMX PORT	**1**/2	Determines whether DMX signal is accepted on Port 1 (data 1 conductors / pins 2 and 3 in the fixture's 5-pin XLR connectors) or Port 2 (data 2 conductors / pins 4 and 5 in the fixture's 5-pin XLR connectors)
	RDM PORT	1/**2**	Determines whether RDM signal is accepted on Port 1 (data 1 conductors / pins 2 and 3 in the fixture's 5-pin XLR connectors) or Port 2 (data 2 conductors / pins 4 and 5 in the fixture's 5-pin XLR connectors)
	DMX TERMINATION	On/**Off**	Adds an internal DMX termination across the DMX output. Set this to **On** in the last fixture of each chain on the DMX data link. Leave all others set to **Off**.
	PARAMETER SHORTCUTS	On/**Off**	Set effects to avoid open positions during effects changes (shortcuts off) or take shortest route during changes (shortcuts on)
	DISPLAY	**On**	Display permanently on
		2 min.	Display goes into sleep mode 2 minutes after last key press
		5 min.	Display goes into sleep mode 5 minutes after last key press
		10 min.	Display goes into sleep mode 10 minutes after last key press
	DISPLAY INTENSITY	Auto	Display auto-adjusts to ambient light level
		0 - 100%	Manually set display intensity
	DISPLAY ROTATION	**0** / 90 / 180 / 270 deg.	Rotate display to match fixture orientation
	ERROR MODE	**Normal**/Silent	Disable/enable error warnings
FACTORY SETTINGS	**LOAD FACTORY SETTINGS**		Return all settings (except calibrations) to factory defaults

Table 2: Control menus

Menu	Item	Options	Notes (Default settings in bold print)
FIXTURE INFORMATION	FIRMWARE VERSION	Vxx.xx.xx	Fixture software version
	FIXTURE MAC ID	xx.xx.xx.xx.xx.xx	Fixture's MAC address
	RDM UID	xxxx.xxxxxxxx	Fixture's unique RDM ID
	POWER ON TIME	TOTAL POWER ON	Display hours fixture has been powered on since manufacture (not user-resettable)
		RESETTABLE POWER ON	Display hours fixture has been powered on since last counter reset (user-resettable)
		CLEAR RESETTABLE POWER ON	Reset **RESETTABLE POWER ON** counter to zero.
	LAMP ON TIME	TOTAL LAMP ON	Display hours of lamp use since manufacture (not user-resettable)
		RESETTABLE LAMP ON	Display hours of lamp use since last counter reset (user-resettable)
		CLEAR RESETTABLE LAMP ON	Reset **RESETTABLE LAMP ON** counter to zero.
	LAMP STRIKES	TOTAL LAMP STRIKES	Display number of times lamp has been struck since manufacture (not user-resettable)
		RESETTABLE LAMP STRIKES	Display number of times lamp has been struck since last counter reset (user-resettable)
		CLEAR RESETTABLE LAMP STRIKES	Reset **RESETTABLE LAMP STRIKES** counter to zero.
	AIR FILTERS	RESETTABLE AIR FILTER	Display hours fixture has been powered on since timer was last cleared.
		SET TIME ALERT	Set alert timer from 0 - 750 hours.
		CLEAR RESETTABLE AIR FILTER	Resets **RESETTABLE AIR FILTER** timer to zero.
DMX LIVE	RATE		DMX transmission speed in packets per second
	QUALITY		Percent of packets received
	START CODE		Value of the DMX start code
	STROBE/SHUTTER → FIXTURE ADJUSTMENTS		DMX value (0 - 255) received on each channel Values for fine control channels can only be viewed if available in the DMX mode the fixture is set to
TEST SEQUENCE	ACTION	Start / Stop / Pause	Run test sequence of all functions
	REPEAT	On / Off	Enable auto-repeat of test sequence
	STATUS → DURATION		Scene status information for test sequence
MANUAL CONTROL gives direct access to DMX channels (see DMX protocol on page 37)	RESET	ACTION	Click jog wheel to reset fixture
	STROBE/SHUTTER	0-100% (000-255)	Set shutter opening
	DIMMER	0-100% (000-255)	Set dimmer opening
	CYAN	0-100% (000-255)	Add cyan
	MAGENTA	0-100% (000-255)	Add magenta
	YELLOW	0-100% (000-255)	Add yellow
	CTC	0-100% (000-255)	Add color temperature control (add warmth)
	COLOR	0-100% (000-255)	Select color filter
	GOBO 1	0-100% (000-255)	Select gobo, gobo wheel 1
	GOBO 1 S/I	0-100% (000-255)	Adjust gobo speed/indexing, gobo wheel 1
	GOBO 2	0-100% (000-255)	Select gobo, gobo wheel 2
	GOBO 2 S/I	0-100% (000-255)	Adjust gobo speed/indexing, gobo wheel 2
	MACRO	0-100% (000-255)	Select macro
	GOBO ANI POS	0-100% (000-255)	Set gobo animation wheel position
	GOBO ANI INDX	0-100% (000-255)	Set gobo animation wheel indexing
	BEAM EFFECT INDX	0-100% (000-255)	Set beam effect (rotating prism) indexing
	IRIS	0-100% (000-255)	Set iris aperture
	FOCUS	0-100% (000-255)	Set focus
	ZOOM	0-100% (000-255)	Set zoom
	PAN	0-100% (000-255)	Set pan angle
	TILT	0-100% (000-255)	Set tilt angle
	FIXTURE CONTROL	0-100% (000-255)	Access fixture control commands (see DMX protocol)
	FIXTURE ADJUSTMENTS	0-100% (000-255)	Access fixture adjustment commands (see DMX protocol)

Table 2: Control menus

Menu	Item	Options	Notes (Default settings in bold print)
SERVICE	**ADJUST**	**CMY MODULE**	**DIMMER** – For use by qualified service technicians - see Martin service documentation before entering this menu.
	CALIBRATION	**DEFAULT CALIBRATION OFFSET**	Set individual effects to factory default calibration positions
		SHUTTER ... TILT	Set individual effects to calibration positions
		LOAD DEFAULTS	
		SAVE FACTORY DEFAULTS	
	UPDATE FIRMWARE		Prepare fixture for firmware upload via USB port
	PAN/TILT SENSOR CALIBRATION	**PAN/TILT AT ENDSTOP**	Registers pan and tilt end positions if you move pan fully clockwise (seen looking from the top of the yoke towards the base) and tilt fully applied with the front lens pointing towards the base and facing away from the display.

Table 2: Control menus

Service and display messages

The MAC III Profile gives service and maintenance information by displaying a large 3- or 4-character short code and a smaller full-text message in the display. The short code is visible at a distance, allowing error identification with the fixture still in the rig, for example, while the full-text message gives more detailed information about the error.

Service warnings

If the MAC III Profile requires service, it displays a warning indicating the service required. The most important short codes and messages are given in Table 5 below

Short code	Full-text message
LLW	LAMP LIFE
EFHA	EFFECT HATCH
DOOR	LAMP DOOR OPEN
HOT	LAMP HOT
HT W	HEAD TEMP TOO HIGH
YT W	YOKE TEMP TOO HIGH
BT W	BASE TEMP TOO HIGH
LT W	LAMP TEMP TOO HIGH
PT W	PSU TEMP TOO HIGH
EEPR	EEPROM INVALID/NO CONN.
BANK	UNABLE TO UNPACK BANK

Table 4: Warning messages

Error messages

The MAC III Profile monitors its own operation. If it detects an error, it displays an error warning. The most important short codes and messages are given in Table 5 below:

Short code	Full-text message
FBEP	PAN FEEDBACK ERROR
FBET	TILT FEEDBACK ERROR
PAER	PAN ERROR
TIER	TILT ERROR
PSER	PAN SENSOR ERROR
TSER	TILT SENSOR ERROR
C1ER	COLOR WHEEL 1 ERROR
G1ER	GOBO WHEEL 1 ERROR
R1ER	GOBO WHEEL 1 ROTATION ERROR
G2ER	GOBO WHEEL 2 ERROR
R2ER	GOBO WHEEL 2 ROTATION ERROR
APER	AW POSITION ERROR*
ARER	AW ROTATION ERROR*
FOER	FOCUS ERROR
ZOER	ZOOM ERROR
CYER	CYAN ERROR

Table 5: Error messages

Short code	Full-text message
FBEP	PAN FEEDBACK ERROR
FBET	TILT FEEDBACK ERROR
MAER	MAGENTA ERROR
YEER	YELLOW ERROR
CTER	CTC ERROR
DIER	DIMMER ERROR
SHER	SHUTTER ERROR
BEER	BEAM SHAPER ERROR
BRER	BEAM SHAPER ROT. ERROR
IRER	IRIS ERROR
DRE1	DRIVER 1 ERROR
DRE2	DRIVER 2 ERROR
DRE3	DRIVER 3 ERROR
DRE4	DRIVER 4 ERROR
DRE5	DRIVER 5 ERROR
DRE6	DRIVER 6 ERROR
DRE7	DRIVER 7 ERROR
DRE8	DRIVER 8 ERROR
DRE9	DRIVER 9 ERROR
UPLZ	UPLOAD ERROR ON ZOOM/FOCUS
UPLP	UPLOAD ERROR ON PAN/TILT
UPLE	UPLOAD ERROR ON EFFECT
UPLM	UPLOAD ERROR ON CMY
UPLC	UPLOAD ERROR ON COOLING
UPLU	UPLOAD ERROR ON UI**
UPLH	UPLOAD ERROR ON CHARGER
UPLB	UPLOAD ERROR ON BALLAST
CONZ	ZOOM/FOCUS NO CONNECTION
CONP	PAN/TILT NO CONNECTION
CONE	EFFECT NO CONNECTION
CONM	CMY NO CONNECTION
CONC	COOLING NO CONNECTION

Table 5: Error messages

* AW = animation wheel
** UI = user interface

Troubleshooting

Problem	Probable cause(s)	Remedy
One or more of the fixtures is completely dead.	No power to fixture.	Check that power is switched on and cables are plugged in.
	Primary fuse blown (located near mains inlet).	Isolate fixture from power and replace fuse.
	Secondary fuse(s) blown (located on PCBs in base).	Isolate fixture from power. Check fuses and replace.
Fixtures reset correctly but respond erratically or not at all to the controller.	Bad data link.	Inspect connections and cables. Correct poor connections. Repair or replace damaged cables.
	Data link not terminated.	Select **DMX termination** in control panel of the last MAC III Profile on the data link.
	Incorrect addressing of fixtures.	Check fixture address and protocol settings.
	One of the fixtures is defective and disturbs data transmission on the link.	Unplug the XLR in and out connectors and connect them directly together to bypass one fixture at a time until normal operation is regained. Have the fixture serviced by a qualified technician.
	DMX and RDM ports switched	Check that data port settings match desired pinout at XLR connectors
Time out error after fixture reset.	Effect requires mechanical adjustment.	Contact Martin technician for service.
Mechanical effect loses position.	Mechanical train requires cleaning, adjustment, or lubrication.	Contact Martin technician for service.
No light and lamp error message displayed.	Lamp blown	Disconnect fixture and replace lamp.
	Lamp not installed	Disconnect fixture and install lamp.
	Lamp access door safety switch open	Verify that lamp access door is fully seated and locked in place.
Lamp cuts out intermittently.	Fixture is too hot.	Allow fixture to cool. Clean fixture. Reduce ambient temperature.

Table 6: Troubleshooting

Specifications

Physical

Length . . . . 690 mm (27.2 in.)
Width . . . . 536 mm (21.1 in.)
Height (head straight up) . . . . 914 mm (36.0 in.)
Weight . . . . 53.5 kg (117.9 lbs.)

Lamp

Type . . . . 1500 W short arc discharge
Approved lamp . . . . Osram HTI 1500W/60/P50
Color temperature . . . . 6000 K
CRI (Color rendering index) . . . . >85
Average lifetime . . . . 750 hours
Hot restrike . . . . Semi-hot
Socket: PGJ50
Ballast . . . . Electronic

Dynamic Effects

Color mixing . . . . CMY, independently variable 0 - 100%
Color temperature control . . . . CTO, variable 0 - 100%
Color wheel . . . . 7 interchangeable dichroic filters + open, indexing,
continuous rotation, random color
Rotating gobo wheel . . . . Two rotating gobo wheels, each with 5 interchangeable rotating
gobos + open, indexing, continuous gobo rotation, shake
Gobo animation . . . . Interchangeable animation wheel, indexing, continuous
rotation with variable angle, speed and direction
Prism . . . . Interchangeable 4-facet rotating prism
Iris . . . . 0 - 100%, pulse effects
Mechanical dimmer . . . . 0 - 100%
Mechanical shutter . . . . Strobe effect 2 - 10 Hz, pulse effects, instant open and blackout
Focus . . . . 2 m to infinity
Zoom . . . . 11.5° - 55°
Pan . . . . 540°
Tilt . . . . 268°
Position correction system . . . . Absolute position monitoring

Control and programming

DMX channels 27/30
Setting and addressing . . . . Control panel with backlit graphic display
16-bit control . . . . Dimmer, gobo indexing (gobo wheels 1 and 2), focus, zoom, pan and tilt
Protocol . . . . USITT DMX512-A
Fixture identification . . . . Four-digit user-settable ID number
Receiver . . . . Opto-isolated RS-485
Firmware update . . . . USB memory device

Photometric data

Standard lens, zoom at minimum

Efficiency 22%
One tenth-peak angle . . . . 11°
Total output . . . . 31500 lm

Standard lens, zoom at median

Efficiency 23%
One tenth-peak angle . . . . 32°
Total output . . . . 33300 lm

Standard lens, zoom at maximum

Efficiency 23%
One tenth-peak angle . . . . 53°
Total output . . . . 33800 lm

Measurement source: Osram HTI 1500W/60/P50
Measurement conditions: 227 V, 50 Hz, no effects applied

Construction

Color . . . . Black
Housing . . . . Magnesium alloy, UV-resistant fiber-reinforced composite
Reflector . . . . Glass, cold light
Protection rating. IP20

Gobos

Size . . . . .E
Outside diameter . . . . 37.5 mm (1.5 in.) +0/- 0.2 mm (0.01 in.)
Maximum image diameter . . . . 30 mm (1.2 in.) +/- 0.4 mm (0.02 in.)
Maximum thickness . . . . 1.1 mm (0.04 in.) +/- 0.1 mm (0.004 in.)
Recommended glass . . . . Borosilicate 3.3 or better with dichroic or heavy matted aluminum coating

Gobo animation wheel

Outside diameter . . . . 133.9 mm (5.3 in.) +/- 0.1 mm (0.004 in.)
Image outer diameter. . . . . .130 mm (5.1 in.)
Image inner diameter. . . . . .32 mm (1.3 in.)
Thickness. . . . . 1.1 mm (0.04 in.) +/- 0.1 mm (0.004 in.)
Recommended glass . . . Borosilicate 3.3 or better with dichroic or normal/double mirror aluminum coating

Installation

Mounting points . . . . 2 pairs of 1/4-turn locks
Orientation . . . . any
Minimum distance from illuminated surface . . . . 2.5 m (100 in.)
Minimum distance from combustible materials . . . . 0.2 m (8 in.)

Connections

AC power input . . . . Neutrik PowerCon connector with 3 m (9.8 ft.) cable tail
DMX and RDM data in/out. . . . . .5-pin locking XLR
Ethernet (Artnet II compatible, ACN-ready) . . . . Neutrik RJ-45 socket (accepts Neutrik EtherCon
. . . . .connectors in housing)
USB devices (including USB memory storage) . . . . USB host socket
Future USB options . . . . .USB device socket

Electrical

AC input . . . . 3 m trailing cable w/o cord cap
AC power . . . . 200-240 V nominal, 50/60 Hz
Power supply . . . . auto-ranging electronic switch-mode
Main fuse for 200 - 240 V power . . . . 16 AT (x 2)

Typical power and current

200 V, 50 Hz. . . . . 1801 W, 9.0 A, PF 0.996
200 V, 60 Hz. . . . . 1805 W, 9.1 A, PF 0.995
208 V, 60 Hz. . . . . 1802 W, 8.8 A, PF 0.994
220 V, 50 Hz. . . . . 1788 W, 8.2 A, PF 0.994
230 V, 50 Hz. . . . . 1783 W, 7.8 A, PF 0.993
240 V, 50 Hz. . . . . 1779 W, 7.5 A, PF 0.989
240 V, 60 Hz. . . . . 1786 W, 7.5 A, PF 0.987

Measurements made at nominal voltage. Allow for a deviation of +/- 10%.
PF = power factor

Thermal

Maximum ambient temperature (T_a) . . . . 40° C (104° F)
Maximum surface temperature, steady state, T_a = 40° C . . . . 170° C (338° F)
Cooling. . . . . Filtered forced air (temperature-regulated, low noise)
Total heat dissipation (calculated, +/- 10% at 200 V, 60 Hz) . . . . 6160 BTU/hr

Approvals

EU EMC. . . . . .EN 55 103-1, EN 55 015, EN 61 547
EU safety . . . . .EN 60598-2-17
US safety . . . . ANSI/UL 1573
Canadian safety. . . . . CSA C22.2 No. 166

Included items

Osram HTI 1500W/60/P50 lamp . . . . P/N 97010326
3 m (9.8 ft.) 12 AWG, SJT power cable with Neutrik PowerCon NAC3FCA cable connector P/N 11541503
Dichroic color filters . . . . 7 (installed)
Gobos . . . . 10 (installed)
Tribal waves gobo animation wheel (installed). . . . . P/N 62325143
2 omega clamp attachment brackets with quarter-turn fasteners . . . . 2 x P/N 91602001
User manual . . . . P/N 35000214

Accessories

Half-coupler clamp. . . . . P/N 91602005
G-clamp (suspension with yoke vertically downwards only) . . . . P/N 91602003
Quick-trigger clamp (suspension with yoke vertically downwards only). . . . . P/N 91602007

Spare parts

Osram HTI 1500W/60/P50 lamp . . . . P/N 97010326
Neutrik PowerCon NAC3FCA cable connector for power cable. P/N 05342804
16 AT (slow blow) fuse . . . . P/N 05020047

Ordering information

MAC III Profile in cardboard packing case . . . . P/N 90206000
MAC III Profile in flight case . . . . P/N 90206001

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