# ON TEST

# Robe's Robin MegaPointe

Mike Wood puts Robe's new all-purpose moving head fixture though its paces . . .

**ABOUT THE EXPERT**
**MIKE WOOD**
A technical, design and intellectual property consultant offering services to the entertainment technology industry.
**mike@mikewoodconsulting.com**

I've already looked at a couple of the next generation of all-purpose beam/spot units in this column over the last year (*see LSi May, LSi October 2017*). It's a new category that seems to have good legs in the marketplace. Robe launched its entrant, the Robin MegaPointe, at the PLASA Show in London this September and sent one for me to test immediately after. Companies don't usually send me products so soon after launch, so this was very brave of Robe! There's a lot going on in the MegaPointe, so I'll take my usual approach of working through the light path from lamp to final output . . .

## LAMP AND LAMP ACCESS

The Robin MegaPointe uses a custom Osram Sirius HRI 470W RO lamp with integral reflector - a special version of the lamp made for Robe (see *Figure 2*). The use of a packaged pre-focused lamp ensures the tiny arc is accurately positioned in exactly the right place in the reflector. You also get a nice new clean reflector every time you change it. The MegaPointe differs from some of the competitors in that Robe has expertly designed the lamp access so it's easy to change the lamp - just remove two quarter-turn fasteners, give the lamp a 45° turn, and it lifts out. *Figure 3* shows the lamp with the cover plate removed.

This figure also shows another feature of the MegaPointe lamp - its ability to move. Robe has mounted the lamp and reflector on two linear actuators (visible either side of *Figure 3*), which move the lamp back and forward about 10mm and aid in the switch-over of the optics from Spot to Beam mode. You can see the lamp tilted back in the top, and forward in the bottom of *Figure 3*. This changes the focus from a spiky beam with a pronounced hot-spot for Beam mode to one with a flatter distribution for Spot mode. The user can operate this movement manually through a DMX channel or let the fixture do it automatically by changing modes.

## DIMMER AND STROBE SHUTTERS

The lamp house is capped with a conventional split and angled hot mirror and surrounded by fans and cooling ducts to keep the lamp at its correct operating point. *Figure 4* shows a view from the lamp's perspective. There's a lot going on in this photo: the horizontally split hot mirror is visible, with the twin blades of an air duct above it, directing air into the reflector and onto the arc tube. This is immediately followed by two textured dimmer/strobe


The Robin MegaPointe, from Robe

*"The mixing is certainly one of the best I've seen with CMY dichroics - smooth, with no visible patterning and very slight edge-to-edge colour difference . . ."*

flags, each cut with a V so that they overlap to form a simple square iris. You can also see that the upper blade has a small piece of frosted glass across the V - this presumably softens out the final fade to black. In addition, the mechanical dimmer works together with electronic dimming of the lamp power to provide the final result.

Behind all that, you can see a piece of homogenising glass. This homogeniser is on a motorised arm and is swung into place across the beam. This flag is also part of the systems that switch the unit from Beam to Spot mode, to help with a flatter field and better gobo projection.

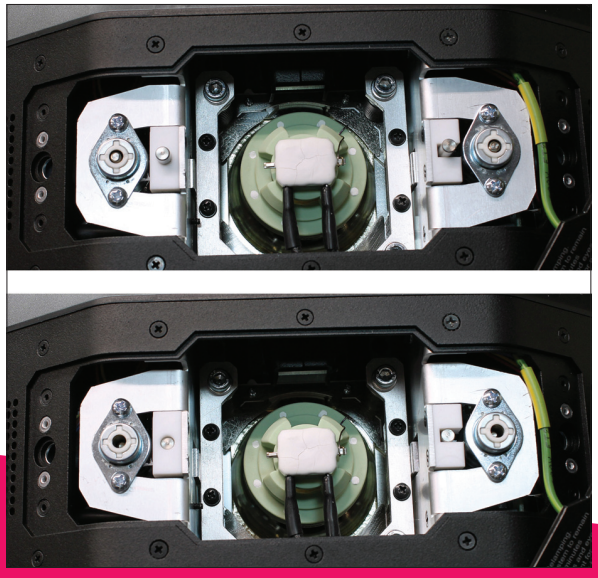
The dimming provided by this system is excellent - smooth, with very little evidence of beam artifacts and just some very slight vignetting at the bottom end. *Figure 5* shows the default square-law dimming curve. It's a pretty steep curve, more like a cube law than a square, but very smooth and step-free. The MegaPointe also offers a linear law if preferred.

The same blades provide strobe functionality, with strobe speeds up to 11Hz according to my measurements.

**COLOUR SYSTEMS**

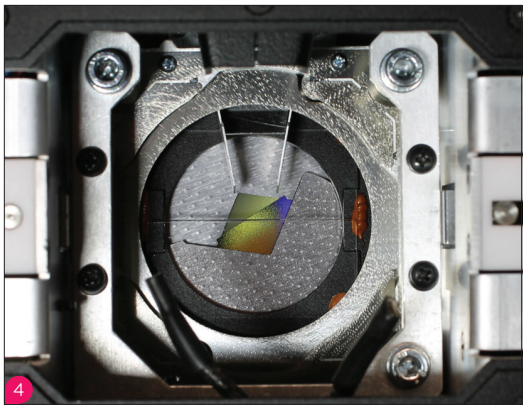
Next in line are the colour systems. First is a small flag that moves a minus-green dichroic filter across the beam, which effectively reduces some of the energy and spikes around the green, bringing the whole spectrum back a little closer to a black body source. However, a filter can only remove energy, so increasing CRI with a filter inevitably reduces light output - in this case I found it increased CRI from around 84 to about 89 with a corresponding 30% drop in output.

The MegaPointe has a set of conventional CMY colour mixing wheels, but what's not quite so conventional is their positioning - they are all slightly angled so that the glass is not at right angles to the beam. This helps prevent the multiple images of gobos you sometimes see when the light bounces back and forth like a hall of mirrors. I've seen angled colour mixing flags used before, but I can't recall seeing this done with entire wheels. Robe also tells me that they are using a new technique for the wheel patterning which they claim produces a much finer and repeatable pattern. The mixing is certainly one of the best I've seen with CMY dichroics - smooth, with no visible patterning and very slight edge-to-edge colour difference.

↑ Figure 2: Lamp

→ Figure 3: Lamp movement



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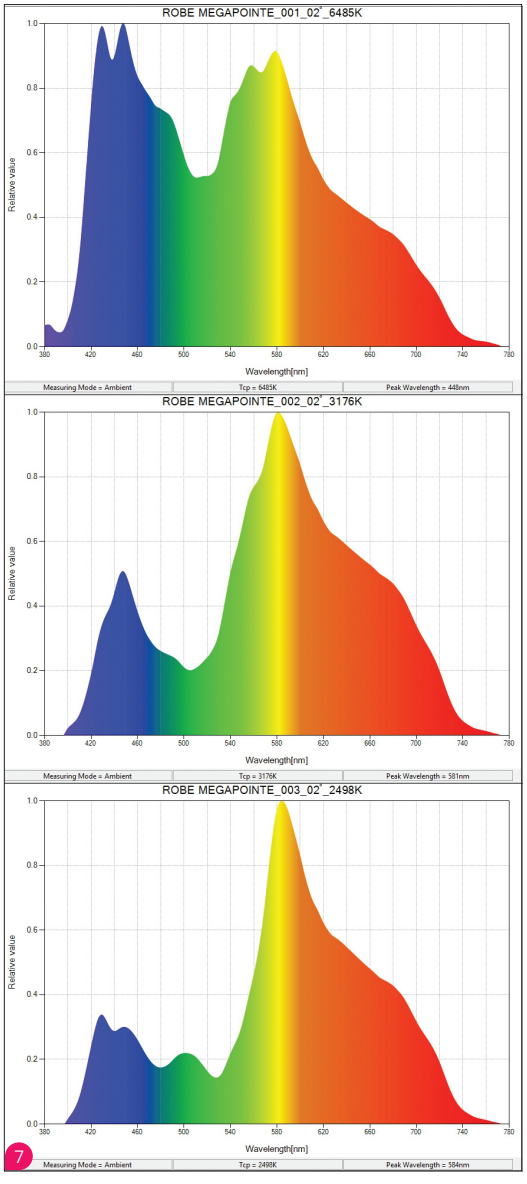


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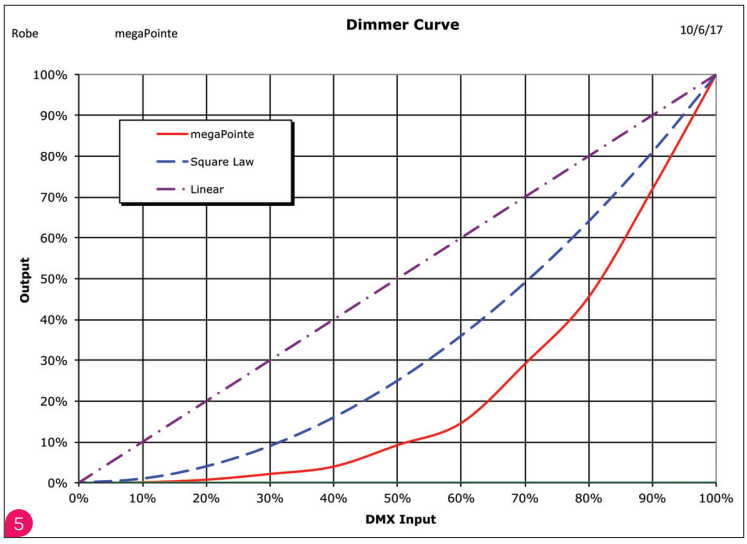


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## COLOUR MIXING

| Colour | Cyan | Magenta | Yellow | Red | Green | Blue |
|---|---|---|---|---|---|---|
| Transmission | 20% | 11% | 78% | 8.9% | 7.9% | 0.5% |

| | |
|---|---|
| Colour change speed - worst case | 0.4 sec |

4 Dimming and Homogeniser
5 Dimmer curve
6 Split colours
7 Spectra

Immediately after the colour mix system is a fixed colour wheel with 13 positions plus open hole. This contains hard-to-mix colours along with two different CTO filters. The spokes between the colours are narrow and didn't interfere with split colours too much as demonstrated in *Figure 6*, which shows split colours without a gobo, focused back on the colour wheel, and with a focused gobo.

With 13 colours this is a large wheel, yet movement was snappy and clean. I measured the colour temperature of the MegaPointe with no filters at 6,485K; the CTO 3200 filter reduced it to 3,176K, and the CTO filter took it down to 2,498K. See *Figure 7* for the spectra of all three.

## COLOUR WHEEL

| Colour | Dk Red | Dk Blue | Yellow | Pale Green | Magenta | Lavender | Pink | Dk Green | CTO | Blue | Orange | CTO 3200 | Congo/UV |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Transmission | 2.6% | 1.4% | 76% | 72% | 13% | 24% | 43% | 24% | 48% | 8.7% | 36% | 59% | 0.3% |

## COLOUR WHEEL SPEED

| | |
|---|---|
| Colour change speed (adjacent) | 0.1 sec |
| Colour change speed (worst case) | 0.4 sec |
| Maximum wheel spin speed | 0.75 sec/rev = 80 rpm |
| Minimum wheel spin speed | 86 sec/rev = 0.7 rpm |

## FIXED GOBO SPEEDS

| | |
|---|---|
| Gobo change speed (adjacent) | 0.1 sec |
| Gobo change speed (worst case) | 0.4 sec |
| Maximum wheel spin speed | 0.74 sec/rev = 81 rpm |
| Minimum wheel spin speed | 157 sec/rev = 0.4 rpm |

## ROTATING GOBO SPEEDS

| | |
|---|---|
| Gobo change speed (adjacent) | 0.2 sec |
| Gobo change speed (worst case) | 0.5 sec |
| Maximum Gobo spin speed | 0.425 sec/rev = 141 rpm |
| Minimum Gobo spin speed | 800 sec/rev = 0.075 rpm |
| Maximum wheel spin speed | 0.6 sec/rev = 97 rpm |
| Minimum wheel spin speed | 136 sec/rev = 0.4 rpm |

### GOBO AND ANIMATION WHEELS

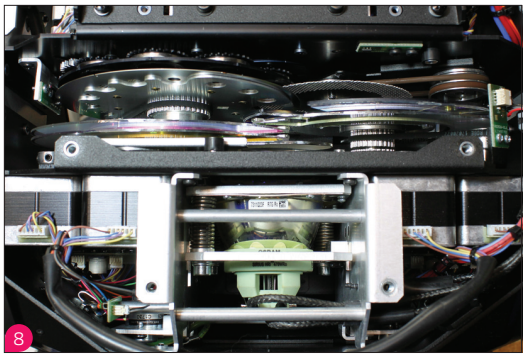
The MegaPointe has a lot of wheels crammed into a very small space. *Figure 8* shows you the entire module, from colour mixing and dim flags at the bottom, to gobo wheels at the top. These very fast optical systems have correspondingly small depth of field, so everything needs to be really close together.

The first imaging component is the fixed gobo wheel. This has 14 fixed patterns, which include four different aperture sizes for aerial beam effects, effectively taking the place of an iris. Movement was crisp.

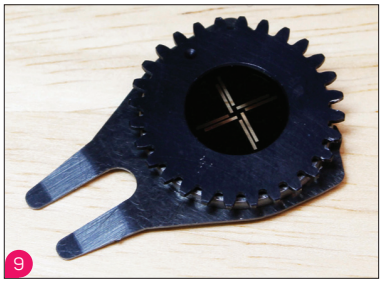
The rotating gobo wheel has nine replaceable patterns (see table, right). Rotation and indexing were smooth on the rotating wheel, with a good range of rotation speeds. Movement was clean when changing direction with low hysteresis. I measured the accuracy at 0.19° of hysteresis error which equates to 0.8" at a throw of 20ft (34mm at 10m). Both wheels use a quick-path algorithm to minimise change times.

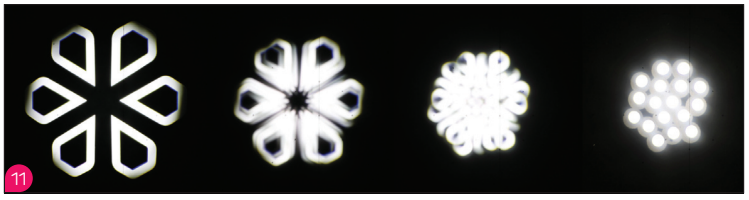
*Figure 9* shows one of the tiny, 12.5mm image, snap-fit replaceable gobos from the rotating wheel, and *Figure 11* shows a focus change morph from the rotating wheel (left) to the fixed wheel (right). The fixed gobos are much smaller than the rotating, so you do get some vignetting of the rotating image.

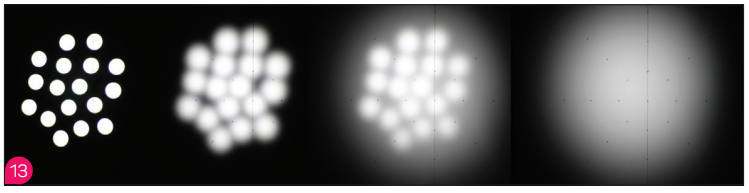
In between the two gobo wheels is an animation wheel. This is a single-patterned wheel, which moves in and across the beam,

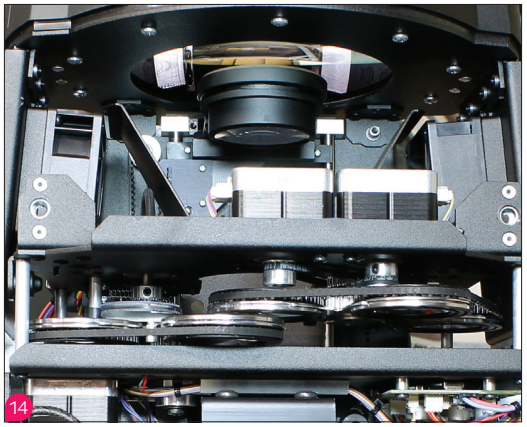


8 Optical assembly
9 Gobo
10 Example of prism
11 Gobo morph
12 Prisms
13 Frost levels
14 Post imaging optics









allowing a change of the apparent rotation angle as it does so. It took approximately 0.2 sec to insert or remove the wheel. Once in place, it can be rotated at speeds from a maximum of 0.35 sec/rev (171 rpm) down to a glacially slow almost imperceptible speed.

## FROST AND PRISM

The final elements in the MegaPointe, apart from the lenses, are the frost and prism systems. The MegaPointe has the usual three lens groups, the first two of which move and provide zoom and focus, while the last element is fixed as the large output lens. However, the prism system is far from conventional.

The MegaPointe has two wheels, each with three rotating and indexing prisms. These can be used alone or in combination to produce a very wide range of effects. They are positioned in between lens group one and two, so there are some limitations on lens position when in use, but the fixture takes care of that for you. *Figure 12* shows one of the wheels with its three prisms, the other is identical but comes in from the other side. I think the prisms are particularly effective when used with the Beam mode with many different dynamic effects on hand. It's impossible to show those in a photograph, but I hope *Figure 10* gives you some idea. The prisms took a maximum time of 1 sec to insert (this was when a lens had to move out of the way first) and can then be rotated at speeds from 0.72 sec/rev (83 rpm) down to exceedingly slow rates. There are control channels with many pre-programmed effects for the two prism wheels, particularly useful when in aerial beam mode.

Another trick that the prisms produce is the ability to get a fairly square or rectangular beam by combining a cylindrical barrel prism running north/south on one wheel with another prism running east/west on the other. By using zoom and altering the prisms you get a form of simple soft edge beam shaper control with four combinations of sizes. Again, Robe has given this mode of operation of the prism wheels its own dedicated control channels to make access to it easier, one to set the size, and the other to control the rotation of the rectangle.

As Robe did with the BMFL, the MegaPointe has two separate frost flags, one light and one medium and either one or both of the filters can be inserted at the same time to give a combined heavy frost effect. *Figure 13* shows the possible frost levels this system gives a fixed gobo and *Figure 14* shows all these systems in place - the two frost flags are opposite one of the prism wheels, so can't be used at the same time; then, at the top is lens group 2, zoom right next to the fixed output lens, while lens group 1 is off the bottom of the picture.

## LENSES AND OUTPUT

I measured zoom as taking 0.9 sec to move end to end, while focus took 0.5 sec, with both moving smoothly and quickly. With regards to output, in Spot mode I measured MegaPointe as providing 15,865 lm at the wide angle of 38.2° while narrow angle in Spot mode is 3°.

The corresponding output in Beam mode was 18,842 lm. However, it's trickier to measure total lumens in Beam mode with a very defined hot-spot as the method I use assumes a relatively smooth light distribution, so I may have increased error in my figures. Also, as I've mentioned before with this kind of unit, lumens are not

## ROBIN MEGAPOINTE TECH SPEC

### FEATURES

- Lamp type: Osram Sirius HRI 470 W RO
- Lifetime: 1,500 hours
- Light output: 2.215.000 lx @ 5m
- Zoom optical system: 14:1
- Zoom range: 1.8°- 21° beam mode, 3°- 42° spot mode
- Effects: rotating and static gobo wheel, animation wheel, 12 beam and flower effects
- Protocols: USITT DMX-512, RDM, ArtNet, MA Net, MA Net2, sACN
- Dimensions: H 640mm (25.2") x W 396mm (15.6") x D 230mm (9.1")
- Weight: 22kg (48.5lbs)
- Output lens diameter: 150mm
- Mounting positions: Horizontal or vertical
- Universal operating position

a good measure of performance with aerial effects - the beam sharpness and contrast are just as, if not more, important. As mentioned above, to switch from Spot mode (used for gobos and pattern projection) to Beam mode (used for aerial effects), the MegaPointe adjusts the lamp and reflector position and removes the homogeniser so that the beam has a much more pronounced central hot spot. You then insert a gobo from the fixed wheel to reduce the aperture size, effectively cropping the beam down to that hot spot. With the smallest gobo in place the beam size drops to 0.2°, which gives you an almost parallel tight beam visible in any kind of haze (*Figures 15* and *Figure 16* show the output at wide angle in Spot and Beam modes - note there is more light in Beam mode, with a tighter central peak). Switching the unit into Beam mode enforces a smaller maximum aperture on the second gobo wheel, thus effectively reducing the maximum beam size by 50%. Nothing has changed optically, but the outer edges of the beam are cut off in this mode. You can still access all possible options, including the larger aperture if you want to, by entering Beam mode manually through control of the lamp position via the 'hot-spot' channel.

### PAN AND TILT

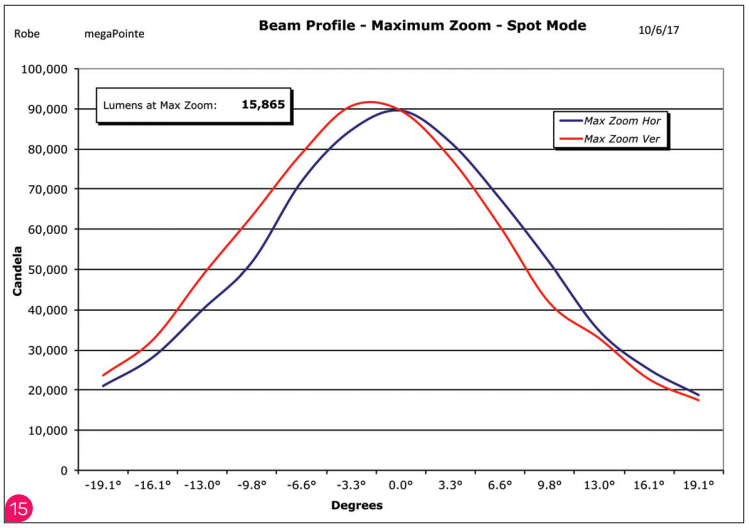
I measured the pan and tilt range of the Robin MegaPointe at 540° and 265° respectively. A full range 540° pan move took 3.4 sec to complete, while a more typical 180° move finished in 1.75 sec. Tilt took 2.2 sec for a full 265° move and 1.7 sec for 180°. All movements were very smooth with very little bounce and no visible steppiness. I measured hysteresis on pan at 0.06°, equivalent to 0.2" at 20 feet (10mm at 10m) while tilt hysteresis was 0.04°, equivalent to 0.2" at 20 feet (7mm at 10m). Robe is using the same accelerometer driven pan and tilt control they have on recent products, which enables extremely precise movement with no overshoot or ringing.

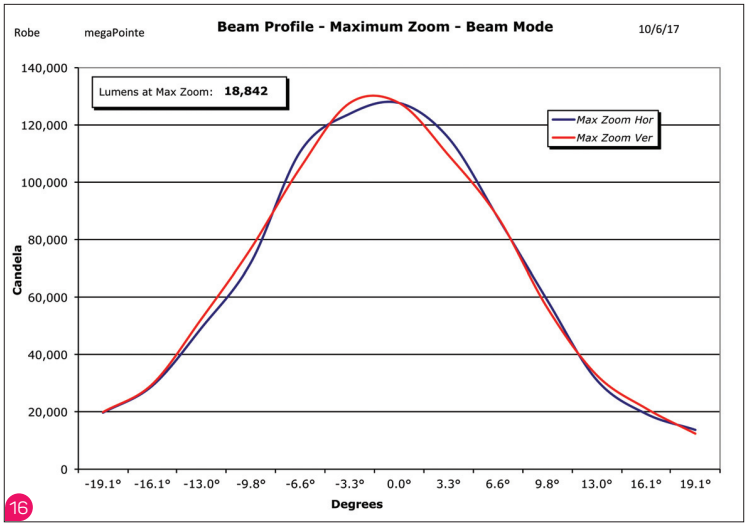
### NOISE

MegaPointe is a small unit and has a 470W short arc lamp, so the bulk of the noise comes from the cooling fans around that lamp. Usually zoom and focus are the noisiest movement function, but in this case it was the prism wheels - they are quite large, heavy wheels that are being moved quickly.

### HOMING/INITIALISATION TIME

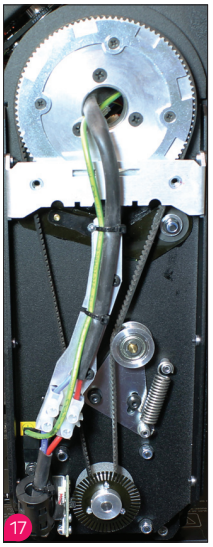
Full initialisation took 57 sec from either a cold start or a DMX512 reset command. Homing is well behaved in that the fixture fades out smoothly, resets and keeps its shutter closed before fading up again after all reset movement is finished. The lamp is cold-restrike and took between five and six to cool down after being doused before it could be re-struck.




## SOUND LEVELS

| | Normal Mode |
|---|---|
| Ambient | <35 dBA at 1m |
| Stationary | 51.1 dBA at 1m |
| Homing/Initialization | 54.0 dBA at 1m |
| Pan | 51.6 dBA at 1m |
| Tilt | 51.8 dBA at 1m |
| Colour | 51.2 dBA at 1m |
| Gobo | 51.2 dBA at 1m |
| Gobo rotate | 51.3 dBA at 1m |
| Zoom | 51.5 dBA at 1m |
| Focus | 51.3 dBA at 1m |
| Strobe | 51.2 dBA at 1m |
| Animation wheel | 51.5 dBA at 1m |
| Frost | 51.1 dBA at 1m |
| Prism | 53.1 dBA at 1m |




⓯ Maximum zoom (Spot mode)

⓰ Maximum zoom (Beam mode)

⓱ Yoke



⓲ Menu

⓳ Connections

### CONSTRUCTION

The MegaPointe isn't quite as modular as some of Robe's other products, yet components are easy to access. Lamp change, as mentioned earlier, is very straightforward and could be done in the rig. However, changing gobos does require removing an air duct to access the gobo wheel and is still slightly tricky. The lamp ignitor is mounted in the head, close to the lamp.

*Figure 17* shows one of the yokes with the lamp power wires running through past the tilt motor, belt, and position encoder. The other yoke is similar, but contains the motor data bus and motor power.

### ELECTRONICS AND CONTROL

The Robe MegaPointe uses the now familiar battery-backed Robe colour touchscreen system providing access to a comprehensive array of set-up and service functions, as shown on *Figure 18*. This system also offers RDM, an optional wireless DMX system provided by LumenRadio, stand-alone operation, and self-test modes. As well as those I've already mentioned, the DMX control options also provide macro channels and many pre-programmed effects and colours. I tested RDM using the City Theatrical DMXcat and it behaved as expected giving full access to the unit.

Finally, the connector panel contains a Neutrik powerCON TRUE1 power input along with standard 5-pin and 3-pin DMX512 connections as well as an RJ45 for Artnet and a USB socket (next to the display) for diagnostic and service access (*Figure 19*). As pictured, the MegaPointe will automatically run on any voltage from 100-240V, 50/60Hz. When running at full output I measured power consumption at 5.62A, 661W, 668VA, with a power factor of 0.98.

Well, that's it from end to end for the Robe Robin MegaPointe Spot. As I said at the beginning of this review, it joins a number of others in the second generation of beam/spot units. It has some refinements and some new features, but the decision on how it will look in your venue and whether or not to use it is, as always, completely up to you. Hopefully the information here will aid you in making that decision.