



# Maquet PowerLED II Surgical Light

Driving surgical efficiency to the next level



# Consistent illumination

to improve patient safety

The knowledge that better illumination results in better patient outcomes led to the development of the Maquet PowerLED II Surgical Light.

Maquet PowerLED II ensures the clearest and highest quality of light for surgeons, without distractions from glare. Built on the proven PowerLED platform that has been trusted for a decade, we've integrated innovative solutions that improve working conditions in your OR.

Maquet PowerLED II provides constant, clear, shadow-free illumination for precise tissue visualization. You can deliver better patient outcomes with our best-in-class lighting technology.

## Putting patients first

For more than a century, Getinge and its well-known brands – such as Maquet – have put patients first. It's why we remain committed to close relationships that identify real-world healthcare challenges, and address them with cost-effective, clinically relevant solutions.

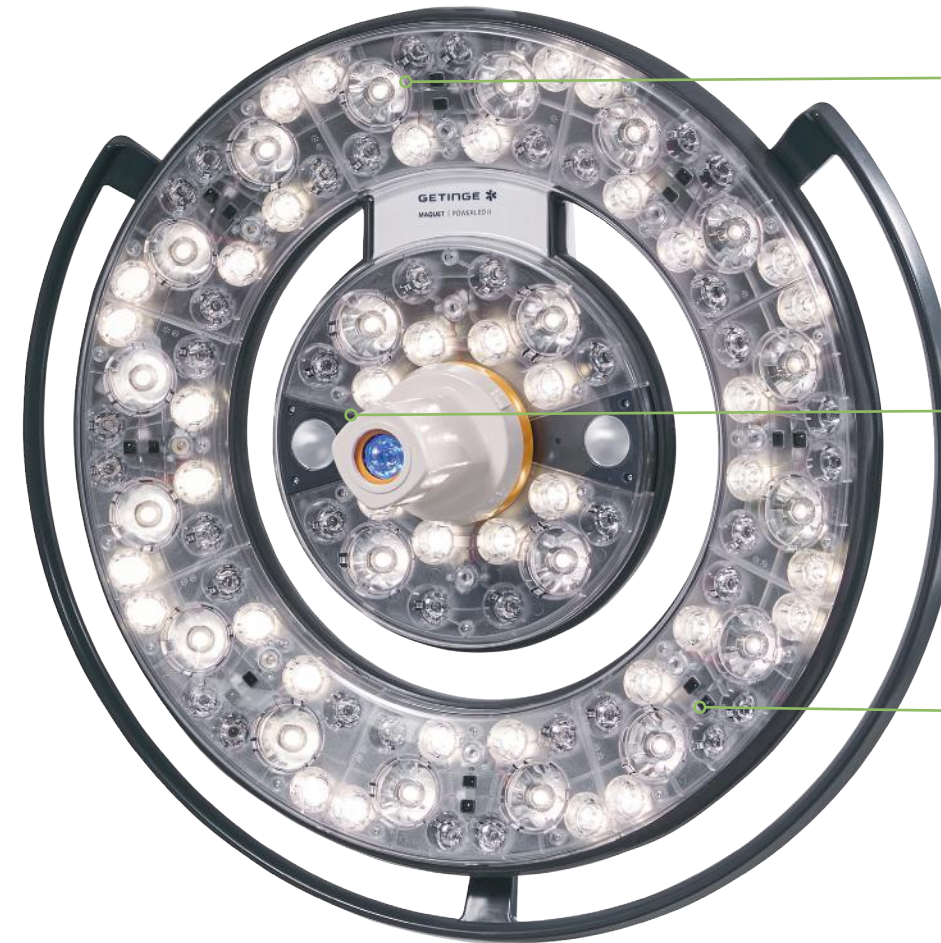
As one of the world's largest medical technology companies, we have the resources to help you protect patients, proactively avoid complications, and prevent ergonomic issues that are common in medical settings. Our comprehensive portfolio of medical technologies will support you and your patients throughout the clinical pathway, so you can deliver the best possible patient care.

# Maquet PowerLED II

Evolving design,  
revolutionary features



Maquet PowerLED II 500



Maquet PowerLED II 700

**Full HD camera wired**

Document procedures in full HD quality to share best practices among surgeons, maintain precise records for risk management, and enhance understanding and learning.

**Small light patch adjustment**

With a minimum size of 13 cm (5.1 in.), Maquet PowerLED II focuses illumination where it's most needed.

**Light patch positioning (laser)**

A laser guide ensures precise positioning for optimal lighting condition

**Automatic Illumination Management (AIM)**

The AIM system automatically compensates for light blocked by the surgeon's head by boosting the remaining zones. This offers total freedom of movement without any reduction in illumination, allowing the surgeon to keep the focus on the patient.

**Luminance Management Device (LMD)**

LMD automatically regulates the illumination reaching the surgeons eyes. The technology maximizes useful light and minimizes eye fatigue by adapting to shadows and avoiding excessive variations in luminosity.

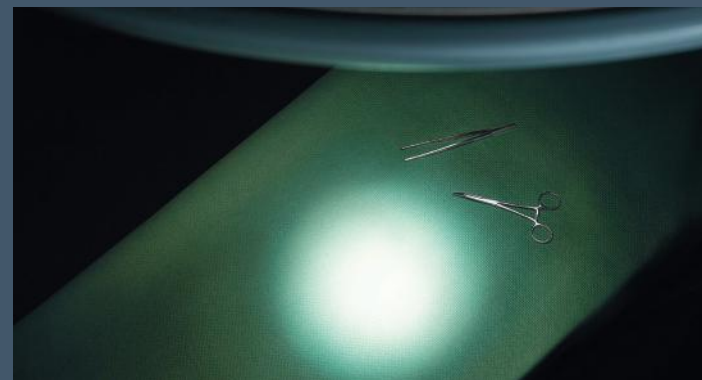
**Comfort Light (optional)**

Comfort Light minimizes luminance contrasts between the center of the surgical light patch and its periphery. This reduces the glare effect to protect against eye fatigue while increasing visual acuity.



**Multiple colors of ambient light**

Maquet PowerLED II's ambient light gives surgical staff the flexibility to choose from six different colors based on preference, limiting glare on the monitors and improving contrast. This improves clarity and helps set a friendly and peaceful mood for surgical staff.



**Adjustment of the light patch diameter**

Match the light patch to the surgical site size, delivering light exactly where it's needed.



**Quick Lock System**

Maximize the value of your investment. Easily transition cameras or LMD systems to share equipment between rooms – no special tools are needed to attach or remove Quick Lock accessories.



**Antibacterial coating minimizes bacteria growth**

Antibacterial film and paint on keypads and external handles limit the risk of cross-contamination and hospital acquired infections.



# Advanced surgical lighting

## to keep patients safer

Patient safety is the most important aspect of healthcare. But in an environment where safety is often equated with new technologies and techniques, sometimes the simplest things can be overlooked.

We believe that positive outcomes rely heavily on surgeons' eyes: the ability to clearly see the problem, assess the situation, and safely treat the patient. In short, good lighting in the OR plays a major role in achieving positive patient outcomes.

### **Surgical safety – color remains stable over time**

Maquet PowerLED II uses only white LEDs to render natural and faithful colors. White LEDs prevent the distracting colored shadows that can appear on the surgical field with the use of colored LEDs<sup>1</sup>. A color rendering index of 96 facilitates clear interpretation and diagnosis. And with long-life LEDs, you can expect more than 60,000 hours of reliable service with no shifts of the optical parameters and no risk to patients.

### **Boost function – prevent surgical complications**

Maximum illumination of 160,000 lux can be quickly achieved by using boost mode during severe bleeding. This provides additional light when needed, but minimizes radiant heat during normal operation to prevent tissue drying. You can operate in total confidence, with no additional uncontrolled risk.\*

### **Smart electronics – prevent downtime**

All LEDs are independently controlled by smart electronics, ensuring maximum illumination even in the event of an electronic failure.

### **Improving OR hygiene**

Hospital-acquired infections contribute to the high cost of healthcare, and delay patient recoveries. Getinge has taken steps to minimize the risk of complications from nosocomial infections throughout the OR by developing an antibacterial coating on high touch surfaces such as touchscreens, keypads and external handles. This coating helps to reduce the risk of cross-contamination to keep patients safe.

### **Open ring design – asepsis compatibility**

The open ring design\*\*, smooth surfaces and excellent heat dissipation aim to work with laminar air flows from all ceiling air flow systems.

### **Shadow management**

The optical system has been designed to enable the medical team to focus exclusively on the surgical operation thanks to advanced shadow management technology. A large number of individual, divergent light beams create a complete light patch, ensuring that the light field will remain circular and shadow-free. Maquet PowerLED II provides the best illumination, even when surgeons are blocking the LEDs.

<sup>1</sup> Knulst AJ, et al. *Surgical Innovation*, 2009

\* Total irradiance is strictly below 500 mw/m<sup>2</sup>.

\*\* The open ring design is unique to the Maquet PowerLED II 700.

# Stable and constant illumination

## Enhanced visibility, diagnosis and treatment

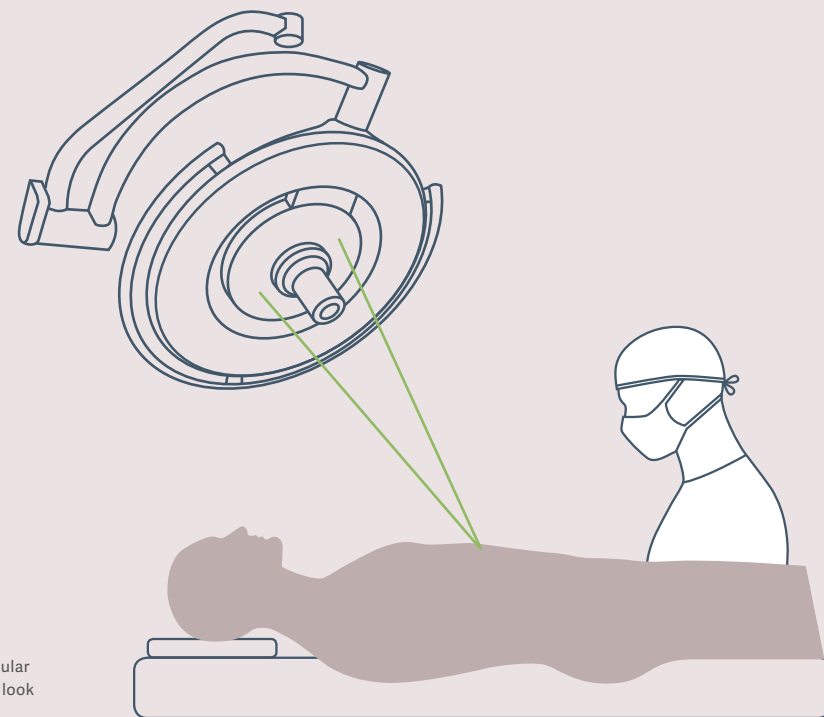
Maquet PowerLED II improves conditions before, during and after each procedure. Long hours in the surgical suite require constant concentration, steady hands, and stamina. But surgeons can't devote their full attention to the procedure if they are distracted by shadows or lighthead repositioning. The workplace experience can be dramatically improved with best-in-class illumination.

High-quality illumination helps to relieve strain, ensure confident assessment, and minimize distractions allowing the surgeon's full attention to remain on the patient. When lights are properly positioned, no time or attention is lost with readjustments. Maquet PowerLED II offers features to ideally position lighting which facilitates surgical procedures.

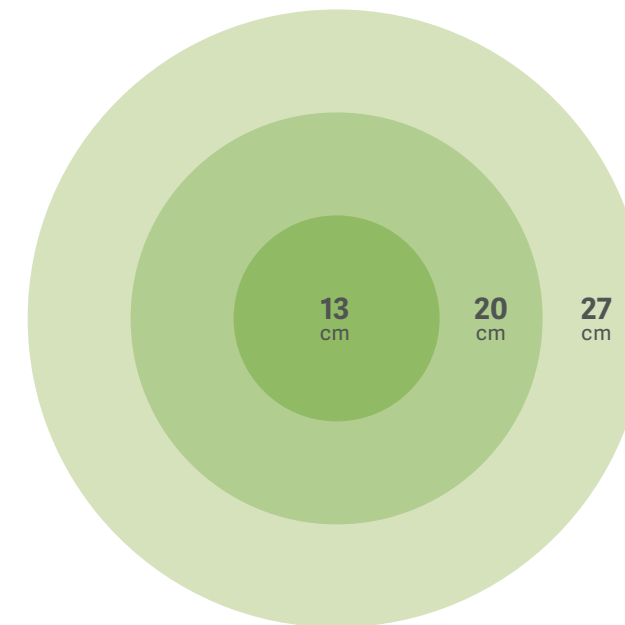
- **Adjust the light patch to the surgical site size:** the light patch is electronically adjustable from 13 cm to 27 cm/5.1 in. to 10.6 in. to match the surgical site size, preventing peripheral glare.
- **Laser positioning for optimal lighting parameters:** a laser guide is available to easily position the lighthead at the right distance and location for optimum working conditions.
- **Consistent illumination from start to finish:** Flux Stability Program (FSP) applies an automatic illumination compensation, cancelling out the drop in intensity that is inherent to LED technology.

- **No illumination lost:** Automatic Illumination Management (AIM) automatically compensates for LED obstructions by surgical staff to deliver consistent and effective illumination, without readjustment. In fact, with two surgeons under the lighthead, useful light remains at 100%.
- **Reduce glare effect:** The Eye Sensitive Response (ESR) function, based on Fechner's law, provides an efficient linear light sensation by gradually adjusting brightness to improve perception.

- **Dimming for any type of application:** Customize illumination from 10 to 100% to reduce eye strain. This improves the surgeon's experience across all applications, from prostatectomy to breast reconstruction.
- **Maximize useful light:** Minimize eye fatigue caused by shadows with the Luminance Management Device (LMD), which automatically measures and regulates reflective light reaching the surgeon's eyes.



Class II laser: risk of injury. A long eyes exposure to laser can lead to ocular injuries. Do not point a laser beam in unprotected patient eyes. Do not look directly into the laser.



Precise positioning light patch adjustment from 13 up to 27 cm (5.1 in. to 10.6 in.) to focus illumination where it's most needed.



Automatic Illumination Management (AIM) dims the light when blocked, while boosting light where it is unblocked, helping minimize shadows.

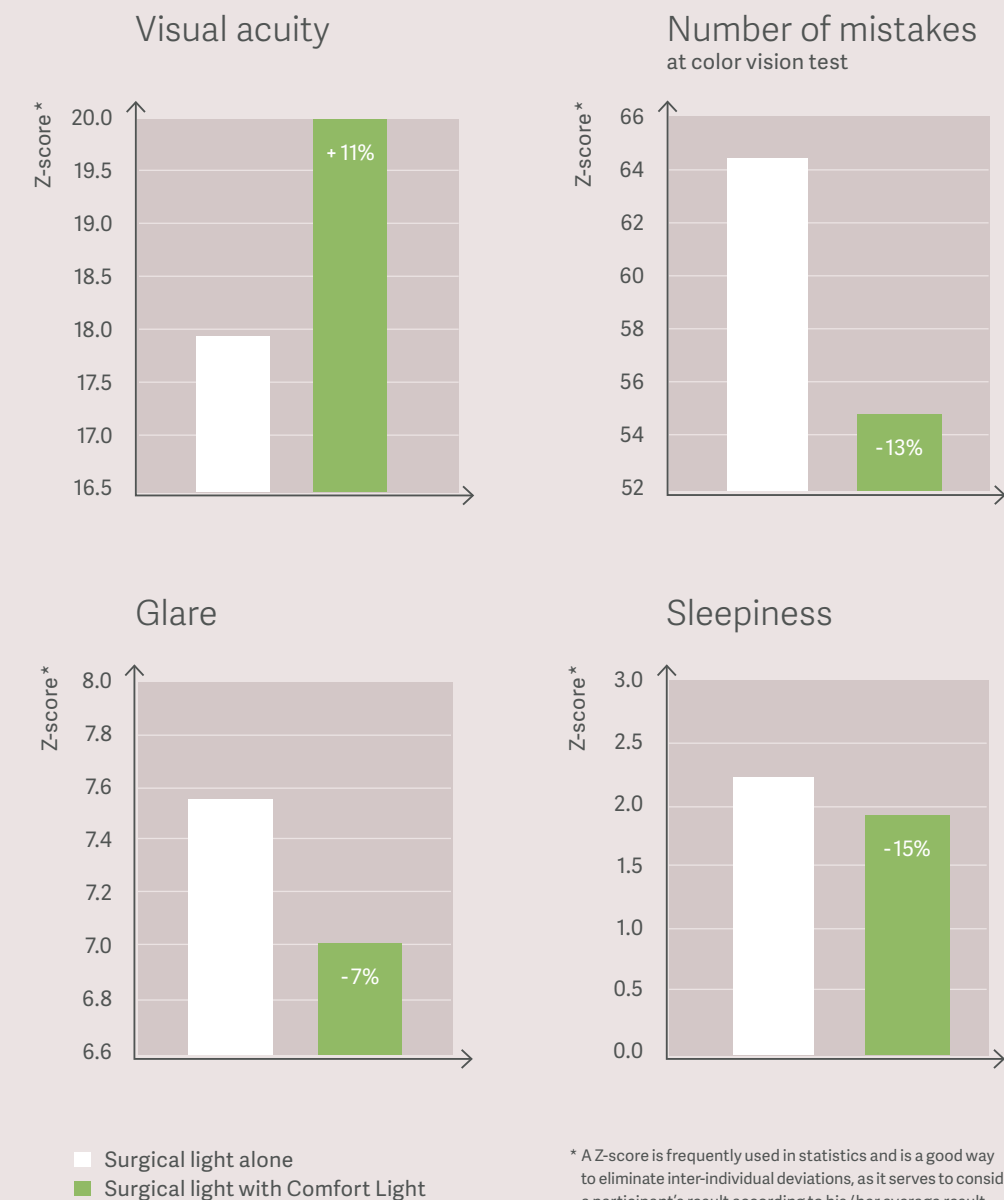


## Improving workplace comfort

Visual fatigue affects work performance. Poor visual conditions can have serious consequences in the OR. However, reducing the contrast between the surgical site and surrounding areas improves comfort and visual performance. Thanks to the Comfort Light feature, Maquet PowerLED II improves visual performance,

reduces the sensation of glare and increases the feeling of wakefulness leading to a better working environment for the surgeons. The number of mistakes during a color vision test was reduced by 13%, the sensation of glare by 7% and sleepiness by 15%, whereas the visual acuity was improved by 11%.

## Reducing visual fatigue to minimize errors with Comfort Light



\* A Z-score is frequently used in statistics and is a good way to eliminate inter-individual deviations, as it serves to consider a participant's result according to his/her average result over all of the scenarios tested. The formula is as follows:  $Z\text{-score} = (\text{value} - \text{average value}) / \text{standard deviation}$ .



## Full integration in the OR environment from general to hybrid rooms

**The touchscreen wall keypad** allows the synchronization of the lightheads to meet surgeon or specialty preferences. Preventive maintenance, including backup power supply testing, operating parameter storage, self-diagnostics, and remote control and communication can be provided. An RS-232 interface can be linked to OR integration systems.

**Sharing information in full HD quality** such as best practices among surgeons or to document procedures for risk management.

**The quick lock system** allows accessories such as HD cameras to be quickly and easily attached or removed without special tools. This minimizes setup time between procedures, and allows easy pooling of accessories, with cameras shared throughout the surgical suite.

**The Maquet Satellite Ceiling Mounting System** allows equipment to be positioned within reach of the surgeon, concealing wires and cables to improve safety and hygiene. Equipment can be easily added, removed and upgraded to meet future requirements.

**Getinge Flat Screen Holders** accommodate larger flat screens – up to 32 inches, with full HD or 4K visualization, without disrupting your surgical light configuration.

**Maquet Moduevo:** Our easily positioned ceiling supply unit range keeps vital equipment near the patient, without cables and connections to get in the way.

### A dedicated Hybrid OR solution

With more than 1,000 completed Hybrid OR installations, we are experts in the field. We know that the Hybrid OR is the future of surgery. We developed the Maquet PowerLED II light to be future-proof, ready for the Hybrid OR when you are.

**Longer suspension arm:** Move the Maquet PowerLED II out of the way to make room for imaging equipment.

**X-ray shield:** Seamless integration with the latest Hybrid imaging technologies.

# Maquet PowerLED II

## Product range

### Multimedia equipment

Single/Double\* Getinge Flat Screen Holder



Maquet Orchide HD (only on external arm)



Wired camera\*\*



LMD



\* Available only via Satellite equipment  
\*\* Full HD

### Keypads

Touchscreen wall keypad



Capacitive wall keypad



Lighthouse keypad



### Suspension arms

Maquet SA Suspension



Maquet Satellite Ceiling Mounting System



Maquet Rolite with Maquet PowerLED II 700



Maquet Rolite with Maquet PowerLED II 500



# Maquet PowerLED II

## Technical data

Optical characteristics	Maquet PowerLED II 700	Maquet PowerLED II 500
Nominal illuminance Ec (lx)		140,000 <sup>1</sup>
Nominal illuminance Ec (lx) with boost mode (lx)		160,000 <sup>1</sup>
Dimming range		10–100% with eye sensitivity response
Light patch diameter (cm / inch)	13–20–27 cm / 5.1–7.9–10.6	13–20 cm / 5.1–7.9
Depth of illumination at 20% (cm / inch)	47-88-98 / 18.5-34.6-38.6	71-115 / 27.9-45.3
Depth of illumination at 60% (cm / inch)	24-43-44 / 9.4-16.9-17.3	38-53 / 14.9-20.8
Color temperature (K)		3,800
Color rendering index (Ra)		96
Irradiance at nominal illuminance (W/m <sup>2</sup> )		<500 <sup>2</sup>
LED life time (hr)		>60,000
Ambient light		<500 lx six different colors
Shadow dilution <sup>3</sup>	Maquet PowerLED II 700	Maquet PowerLED II 500
Shadow dilution with one offset mask (%)		100
Shadow dilution with two masks (%)	100	80
Standard features	AIM, FSP, integrated antibacterial coating, laser positioning	
Additional options	LMD, Comfort Light <sup>4</sup>	
Full HD wired camera		
Number of pixels	2.12 Megapixels	
Optical zoom	x10 (x60 with digital zoom)	

All values are measured according to IEC 60601-2-41.

1. For all light field diameters
2. In standard mode
3. With AIM mode
4. Comfort Light is chosen at the time of order



reddot award 2019 winner





Getinge is a global provider of innovative solutions for operating rooms, intensive care units, sterilization departments and for life science companies and institutions. Based on our firsthand experience and close partnerships with clinical experts, healthcare professionals and medtech specialists, we are improving the everyday life for people – today and tomorrow.

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