



Surgical Lamps
LUMEN



In the OR, it's absolutely critical that the lighting conditions be optimal so you can visualize your work with complete accuracy. However, different surgeries have different lighting requirements. As particular medical equipment, surgical light has complicated parameters and cutting-edge technology. So it is important to help doctors to choose an excellent surgical light satisfying the even more exacting demands made on different surgeries and intensive care.

Experts suggest to carefully observing it from appearance, performance, quality and technique, you may get the idea of how to choose the most excellent surgical light.

Functions

4 major functions determine the perfection of surgical light.

Mixed light function:

Mixed with multicolor spectrum, LUMEN surgical light guarantees a perfect visualization on the surface as well as in deep cavities with very pure white light.

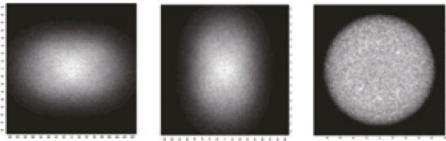
Thanks to optical engine technology, LUMEN surgical light provide consistent white light through mixing multiple color light and stable color temperature irrespective of blocking of the light.



Traditional mixed light

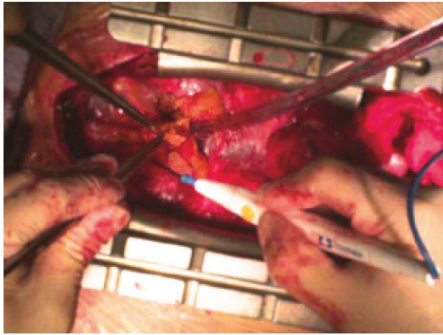


Hosmed mixed lighting



An efficient illumination without spotlight.

In surgery like thoracotomy, the reflected light of metal tools such as retractor and hemostat could be removed while contour shadows are left.



Elliptic spot:

Except from traditional round shape light spot, LUMEN also provides vertical and horizontal elliptic spot with different size.

Endoscopy surgery lighting technology:

The endoscopy surgery requires a light which the luminance must lower than ambient light.

LUMEN surgical light provides consistent lighting and fully stable illumination thanks to the new generation of OSRAM LED bulbs. LED light source support lower lighting with less watts, even under 5500 lux lighting cavity surgery it still performed stable and consistent without flash



Unparalleled shadow management:

Heat radiation is unavoidable if illuminating the light for long time even with LED light, which brought high workload for surgeons by feeling hot.

Intelligent shadow management avoid direct lighting on the surgeons to help them focus on their work.

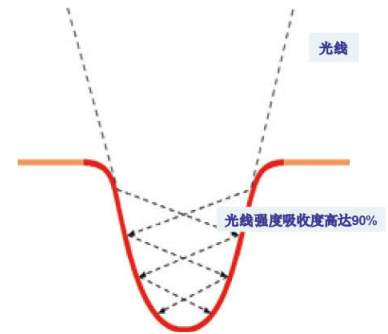
Intelligent shadow management provides consistent illumination in of the surgical field irrespective of the position of the surgeon under the light head, blocking the light. Equipped with sensor in the light helps decreases the illumination of the LEDs which above the surgeon head and increases the illumination of other LEDs, and at the same time remove unwanted cast shadows.

Performance

The key performances of a surgical light:

Luminance:

An excellent surgical light should on the one hand provide different luminance to satisfy different surgery requirements and on the other hand offer the maximum luminance to help clearly observe in deep cavity.

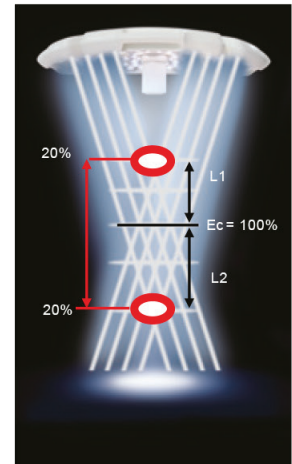


Irradiance:

The illumination from the periphery of the light source, it is one of the most important parameters to evaluate the condensation of the surgical light as well as heat radiation conversion rate of the surgical light. So an excellent surgical light should has lower average radiant energy.

Light depth:

It refers light depth of luminance >20% of the central luminance, indicating surgical light's performance of penetrating deep cavity tissue.



Unparalleled shadow control:

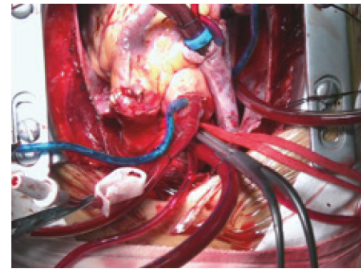
Shadow control is one of the most important parts of a surgical light. Passing the strictest shadow control test in thoracic cavity simulating surgery, LUMEN surgical light is capable to delete unwanted shadows such as those casted by the surgeon's head to ensure excellent illumination at all time .



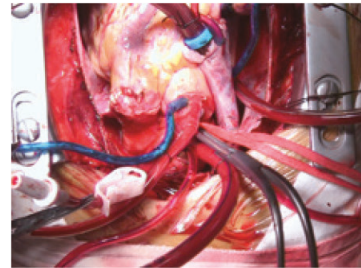
Color temperature (K): Color temperature is an important parameter of high-end surgical light. Different surgeries have different lighting requirements, especially different color temperature. LUMEN provides warm-white and cool-white LEDs to allow the flexibility to adjust color temperature as needed. In cardio surgery, warm-white with high color temperature emphasizes the reds parts to distinguish heart and blood vessel while cold-white with lower color temperature emphasizes the yellow parts to distinguish fat and muscle.



Photographed by LUMEN LED Surgical Light



Photographed by traditional Surgical Light



Color rendering index (CRI) (Ra):

This parameter is used for assess the color rendering performance of the light. R9 red rendering index is the key factor to impact the rendering performance of red tissue such as muscle, blood vessel, blood etc.

Performances	LUMEN	Other similar high lever surgical lights
Illumination (lx)	40000- 160000Lux	Min:40000~80000Lux max:120000~160000Lux
Irradiance (mW/m2.lx)	≤3.65 mW /(m ² • lux)	≤3.9~6 mW / (m ² • lux)
Light depth	≥1300mm	≥900~1300mm
Shadowless rate	65%	45%
Color temperature (K)	3800- 6000k adjustable	Most color temperature is not adjustable, a few can be adjusted from 4350~5500k
Color rendering index (CRI) (Ra)	95.5	90~95
R9	95	Most of them have no red index, and a few < 95

Mechanical performance

The core structures of the surgical light are LEDs and spring arm. These are also the two most concerned parts in clinic.



LEDs chips:

As for the light source chip, L6 uses the new generation of OSTAR medical polychromatic chip from German OSRAM (OSRAM), it has below advantages

- Best reliability
- Excellent color rendering performance. Lowest infrared radiation
- Assist surgeons to perform accurate operation.
- Recognized as the top level surgical light in medical industry.
- Passed 5000 hours lighting test, the LED of LUMEN surgical light has an incredible long life of 15 years.

Camera:

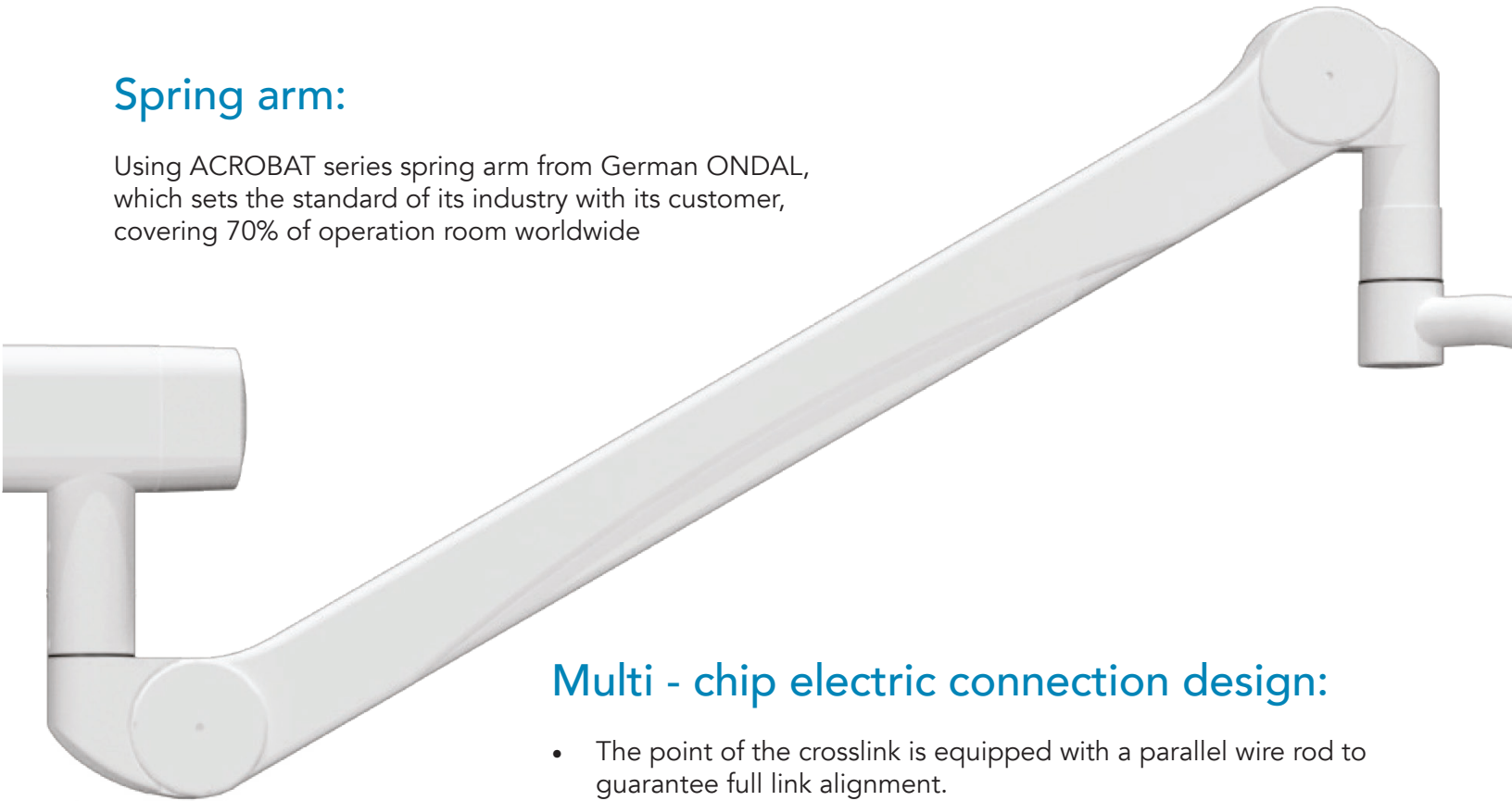
Sony camera system (optional)

- Specialized Sony medical camera system with Exmor CMOS Image sensing
- 20x optical zoom and 12x digital zoom
- Autofocus system
- Perfect night-vision effectiveness with low luminance to 0.001Lux.
- 238megapixel full HD video camera



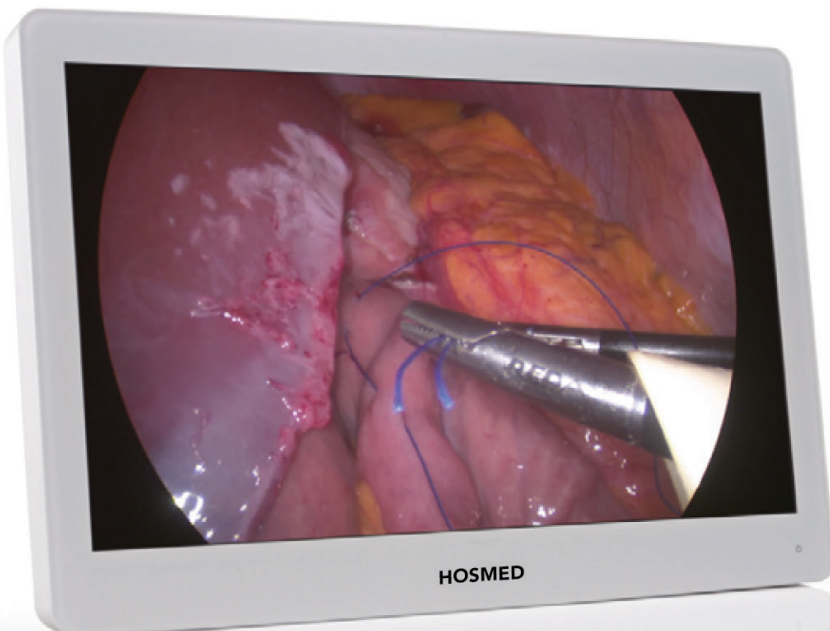
Spring arm:

Using ACROBAT series spring arm from German ONDAL, which sets the standard of its industry with its customer, covering 70% of operation room worldwide



Multi - chip electric connection design:

- The point of the crosslink is equipped with a parallel wire rod to guarantee full link alignment.
- Rotary movement without limit stops with fail-safe power supply and signal transmission possible due to nine-pole current collectors
- Multiple height adjustment options prevent the system from hitting the ceiling.



Display system:

BARCO specialized surgery display system (optional)

- High brightness, contrast and resolution
- provide accurate and realistic images, and excellent perception for surgeons. It can also transmit the operation images without delay.
- With the new generation of 10 bit image-processing algorithm, the display guarantee detailed and clear image without noise and able to distinguish minor changes in the color of the tissue.
- Smooth surface with full screen protection, fan less design.

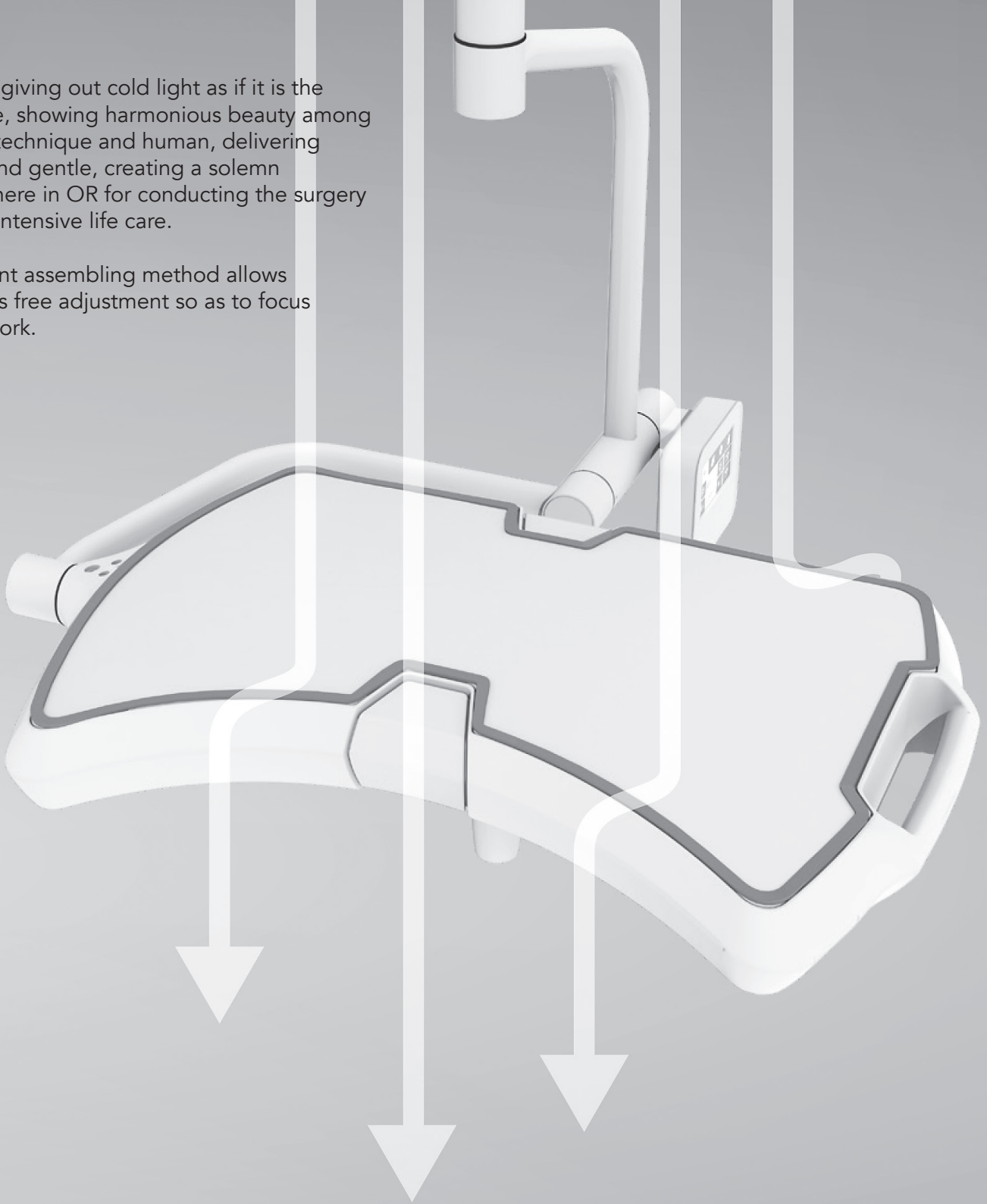


Design and craftwork:

Designed with elements of knife money(ancient Chine), butterfly and plum blossom, LUMEN surgical light offers state-of-the-art feeling for medical staffs while using it.

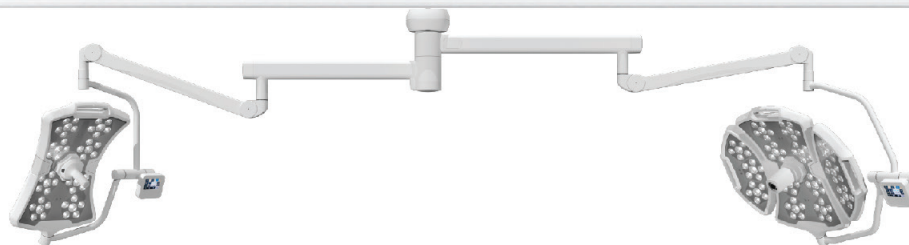
LUMEN giving out cold light as if it is the sunshine, showing harmonious beauty among nature, technique and human, delivering peace and gentle, creating a solemn atmosphere in OR for conducting the surgery and for intensive life care.

Intelligent assembling method allows surgeons free adjustment so as to focus on his work.



The back panel is arc surface with hollow out design to prevent from dust and assist airflow in the laminar flow

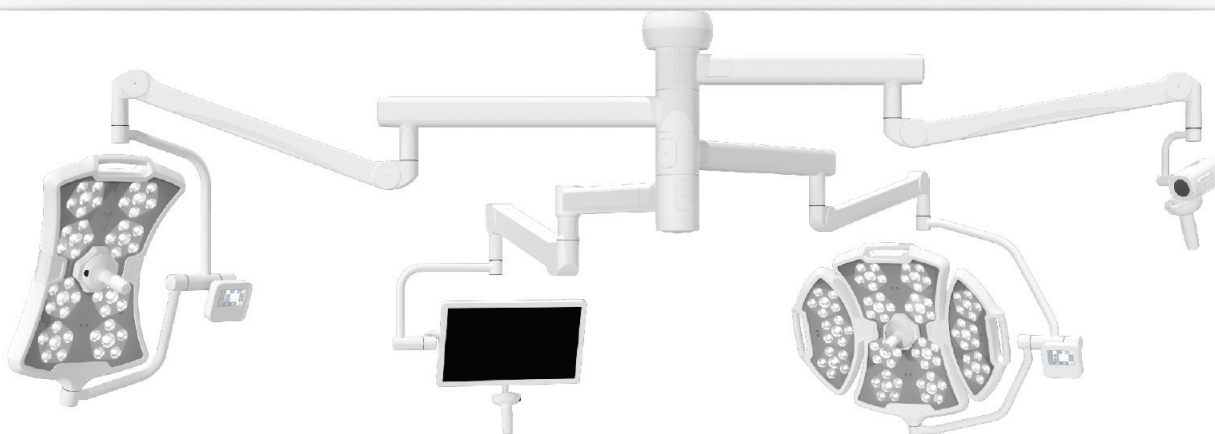
LUMEN Recommended Configuration



Recommended configuration for ordinary operating room



Recommended configuration for teaching and demonstration



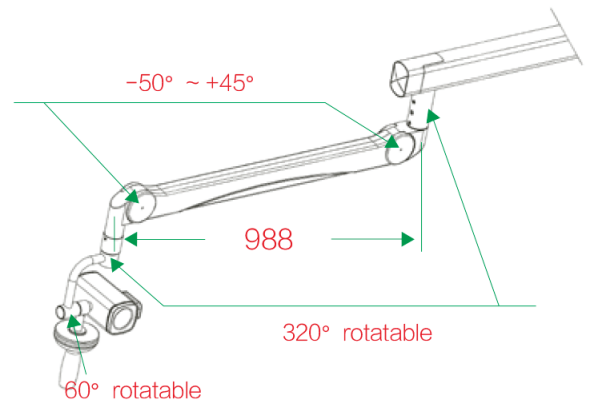
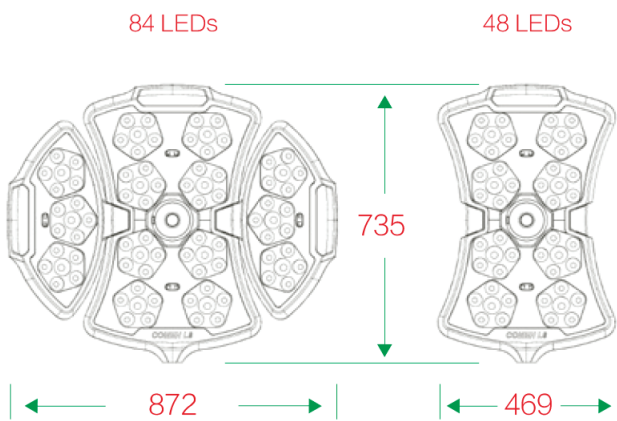
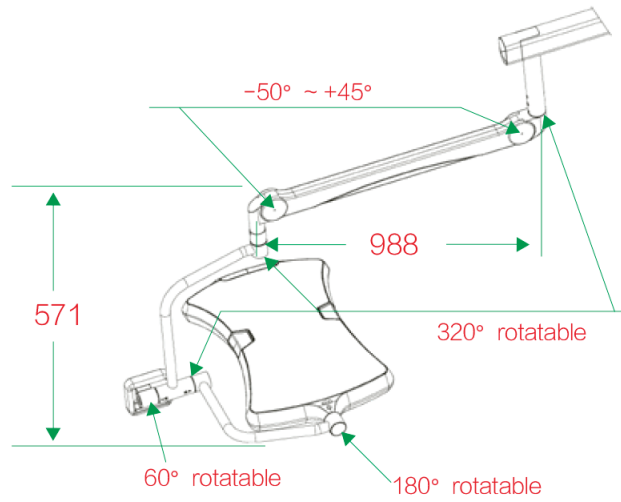
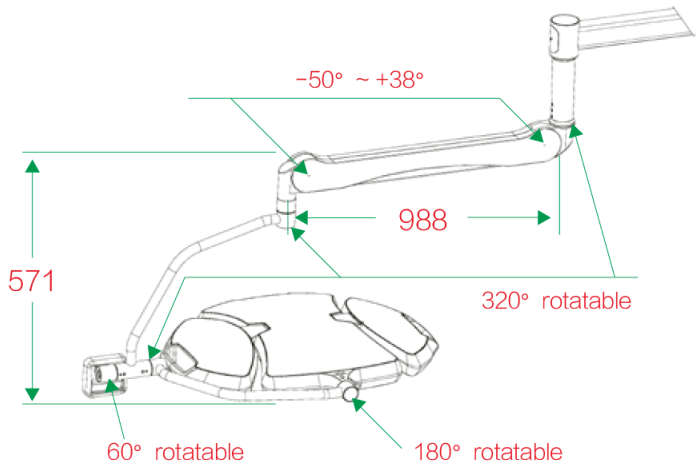
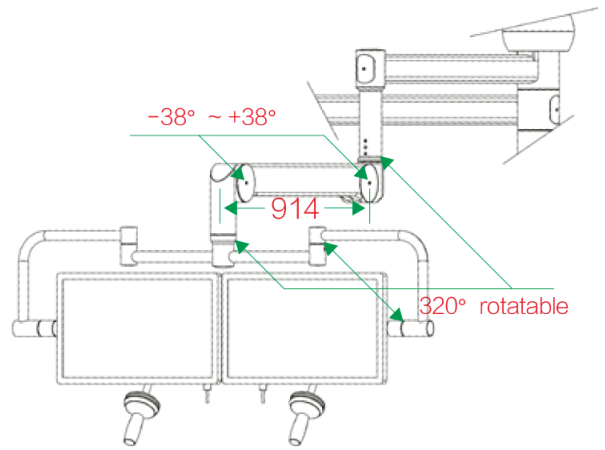
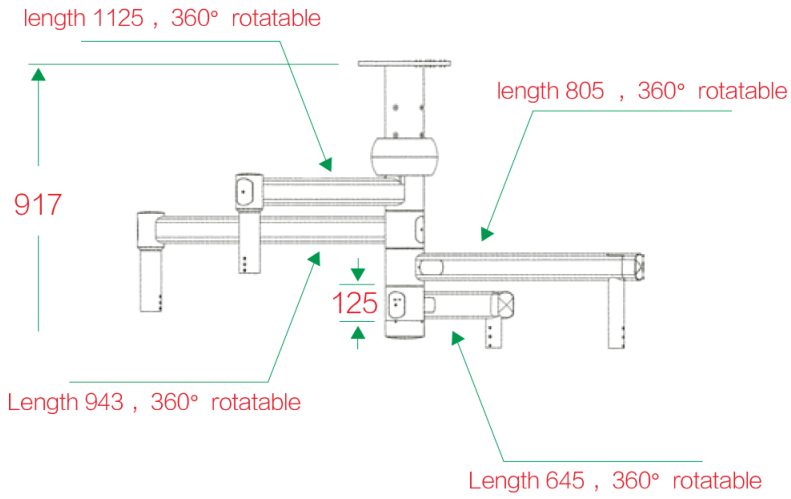
Recommended configuration for hybrid OR and endoscopic OR



Single LUMEN
Recommended configuration for obstetric operating room



Single LUMEN
Recommended configuration for outpatient operating room



Surgical Lamps LUMEN

- Excellent surgical light
- An efficient illumination without spotlight
- Endoscopy surgery lighting technology





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