SKYLUX® YAMADA SHADOWLESS LAMP CO.,LTD.

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IXM INTERACTION. EXPERIENCE. for Medical Environment.

CJ Operation light

Providing an Optimal Light Environment to Every Medical Practice

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IXM
INTERACTION.
EXPERIENCE.
for Medical Environment.

Yamada Shadowless Lamp found one light.
“Medical LEDs.”
This light is close to natural light. “An accurate but gentle light.”

A doctor’s eyes are just as important to them as their hands.
They are always looking at the patient’s ever-changing condition.
In the operation room, their eyes are continually strained under operation lights, brighter than sunlight.

We don’t want doctors to just accept that harsh environment and daily stress as unavoidable.
We don’t want doctors to pretend they don’t feel it.

The IXM Series is not only an operation light, but is fully equipped with “Medical LEDs” for all lights that envelop the entire space.

We’re on a mission.
We want to provide an optimal light environment to every medical practice.
To help doctors do their best. To help save lives.

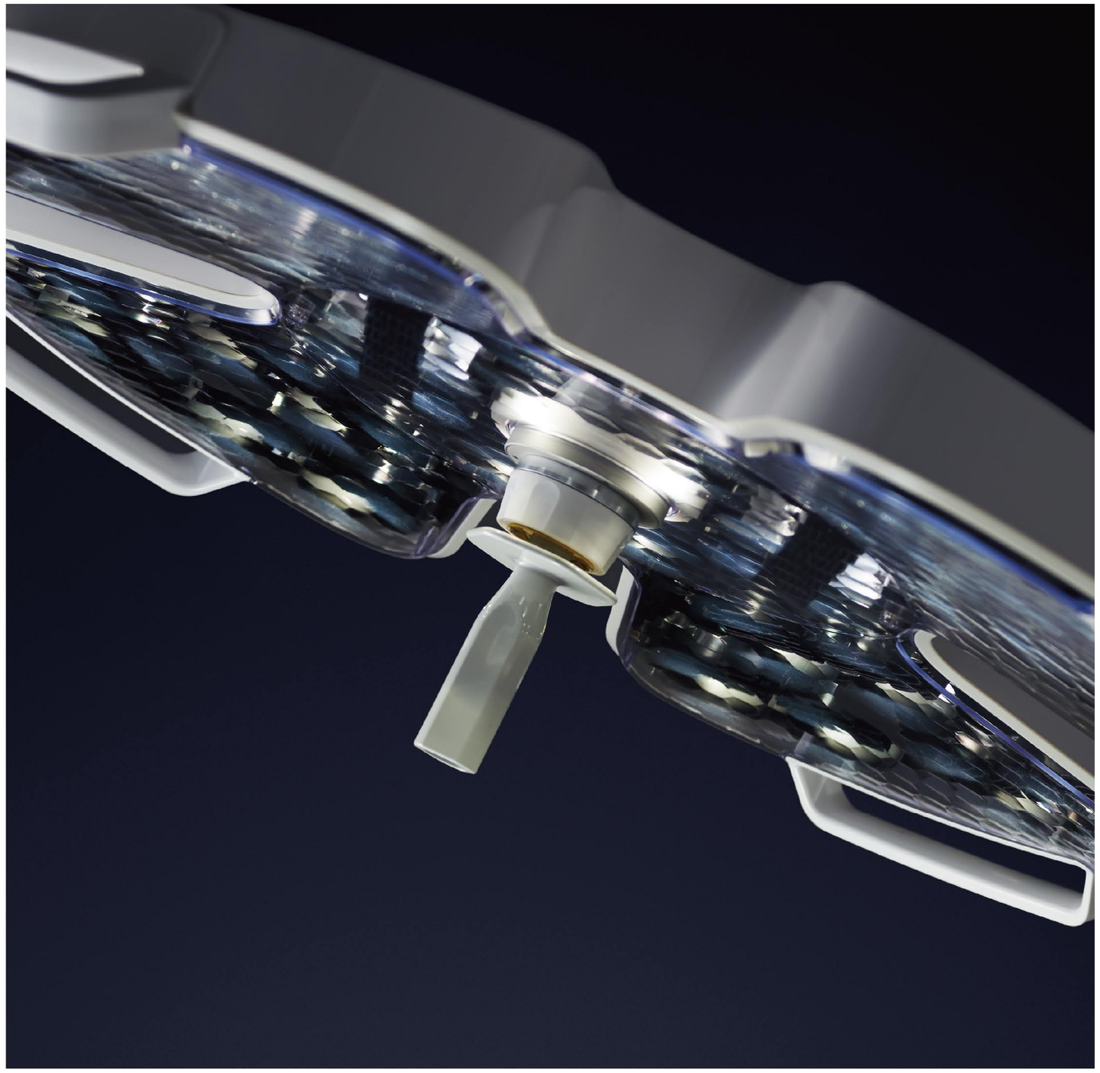
CJ Operation light

Delivering optimal light even to deeper areas

Equipped with Yamada Shadowless Lamp original “Medical LEDs”. Boasting high color reproduction close to natural light and excellent design, these operation lights are of the highest class.

Soft design that puts patients at ease

The lamp head has smooth, beautiful curves from every angle. Patients are nervous before an operation. In order to calm them and help them feel at ease, we used a rounded design that gives a soft impression.



Focus function

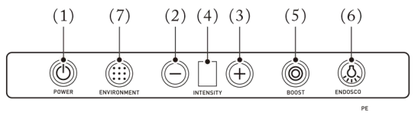
By adjusting the center focus handle (for the physician) or the side focus knob
(for the support staff),users can adjust the illumination based on the distance to the operation site.

Light for endoscopic procedure

The lamp head center is equipped with independent white LEDs as standard equipment. This operates as an auxiliary light for endoscopic operations.

Side panel

Side panel installed on the side of the lamp head. Turn the power on or off, adjust the brightness (from 1 to 8), or turn on or off BOOST mode or the light for endoscopic procedure.



(1) Power ON/OFF switch
(2) Brightness adjustment “Low (-) switch (darker)”
(3) Brightness adjustment “Hi (+) switch (brighter)”
(4) Brightness level display
(5) BOOST switch
(6) ENDOSCOPE switch
(7) ENVIRONMENT switch*

* The ENVIRONMENT switch is a function only installed when the base light (CK) is equipped.

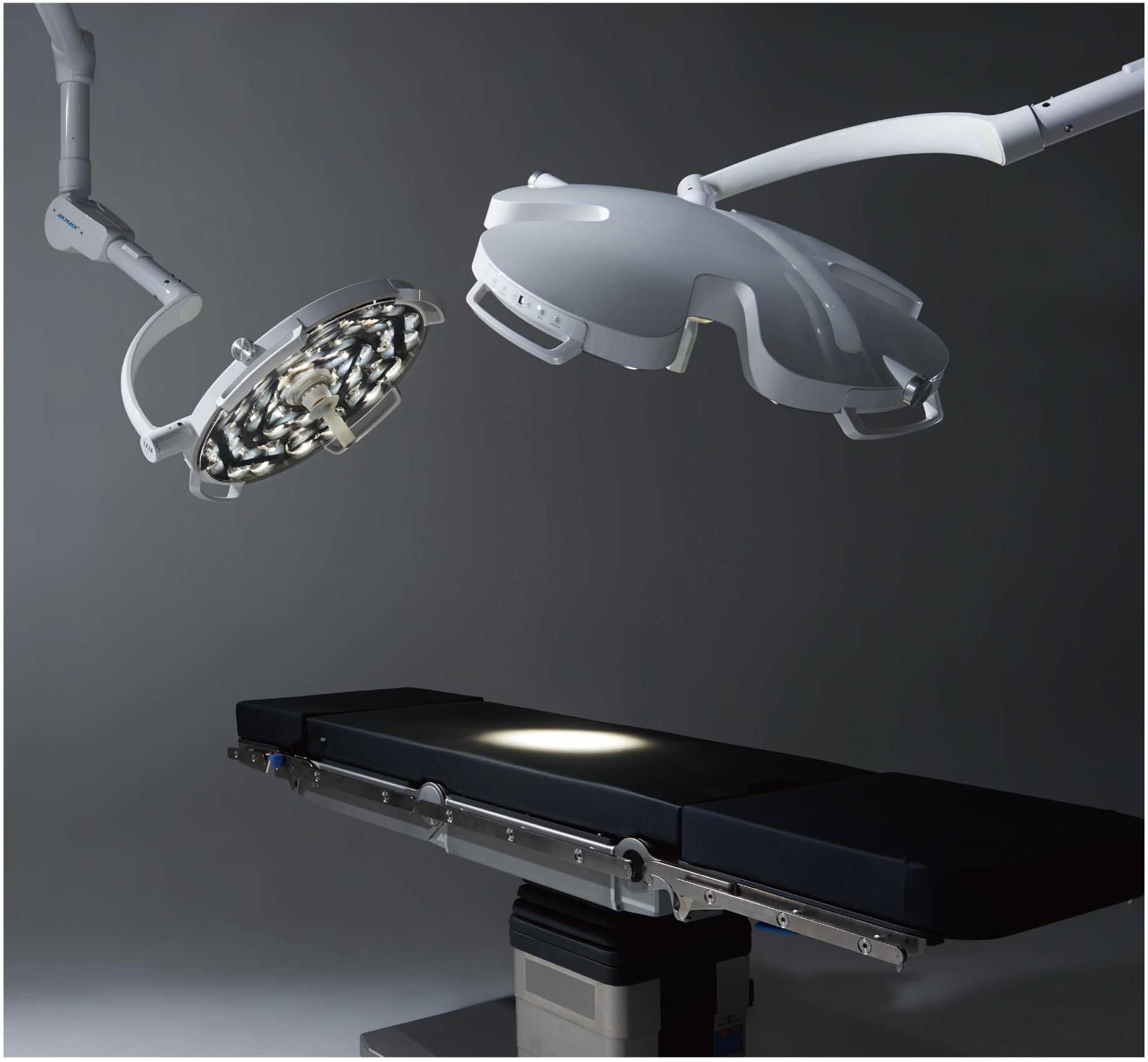
* The airflow is an illustration.

Smooth airflow

The shape of the lamp head is designed to accommodate an air-flow from the ceiling, ensuring a sufficient stream of air.
This allows for a constant stream of pure air to be sent to the operation site during the operation.

Side handle

Handle on the side of the lamp head used in adjusting the position of the operation light.
Its shape is easy to grip and use, helping nurses move during operation.



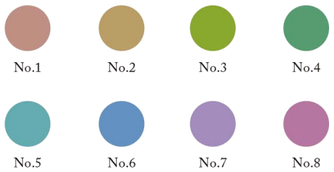
CJ Operation light

We achieve a light environment optimal for medical practices.

"Ultra-high color rendering LEDs" achieve reliable visibility and distinguishability

We used "Ultra-high color rendering LEDs" to achieve a high index of 96 for the R9 value. This corresponds to red (blood) in the special color rendering index (Ri), an index that includes colors close to the human body. This makes the colors of blood, organs, and tissue in the operative field more visible and distinguishable, helping improve the precision of operations.

Average color rendering index (No.1 to 8)



Special color rendering index (No.9 to 15)

Light which brings out an object's true color and quality

Compared to ordinary LEDs, Medical LEDs have a spectrum closer to that of sunlight, and can bring out an object's true color and quality. Human eyes see the light reflected off an object to recognize that object. Medical LEDs can express that reflection more accurately and illuminate more true.

Comparison of ordinary and Medical LEDs

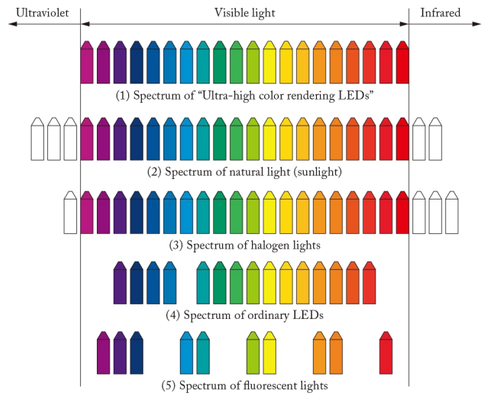
With ordinary LEDs

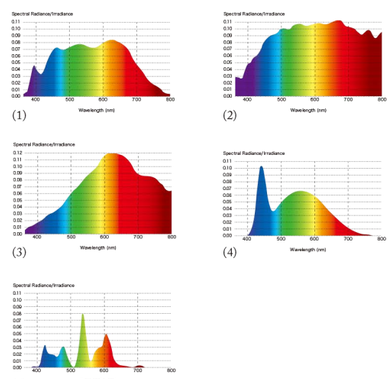
With Medical LEDs

Spectral wavelength range close to sunlight

For example, you can't draw a colorful picture with only one or two colored crayons. If you don't have a skin-colored crayon, you have to use the next closest color, yellow, and the picture ends up different from what you imagined. In the same way, by illuminating light with a spectrum that covers all wavelengths onto an object, that object's true, natural colors become visible.

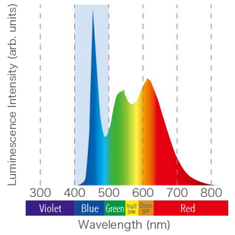
If we imagine the spectrum of light as crayons...



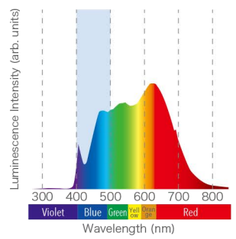


Light that is gentle on your eyes with reduced risk of blue light

Doctors who continue to look at an operation site under an abnormally bright light experience tired eyes due to blue light. "Medical LEDs" reduce the blue light risk and achieve a spectrum that does not strain the eyes.



Radiant spectrum of ordinary white LEDs



Radiant spectrum of the "Ultra-high color rendering LEDs" used in the IXM Series

Adverse effects on human bodies that are considered due to the risk of blue light

Retinopathy	The "macula" (yellow spot in the centre of retina) can be damaged and may cause macular degeneration (AMD) that increases with old age.
Eye strain and stiff shoulders	The blue light has a short waveform and tends to be diffused. This causes glare and flicker, which often results in difficulty in focusing for human brain. The blue light has stronger energy than the lights so that the muscles of eyes can also be strained in the effort of reducing the size of pupils. These may cause strain of the eyes and stiffness in the shoulders and neck.
Sleeping disorder	If retina is damaged by the blue light, it is said that the melatonin secretion becomes lower and disturbs circadian rhythm, which eventually may lead to sleeping disorder.

Characteristics of medical lights

Low-glare light that makes the operation site visible and improves operation efficiency

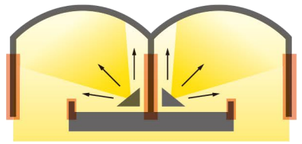
The unique optical design prevents glare when illuminated on the operation site. This significantly reduces eye strain and discomfort for doctors, who must continue to look at the operation site over a long period of time.


Ordinary white LEDs : Light with "glare"

IXM Series : Light with reduced "glare"

Light unit which reduces brightness

The light unit is designed to have a structure that prevents the LEDs from interfering with your work. This structure prevents the physician and support staff from feeling uncomfortable brightness.


Reflective structure with little light leakage

Cross-section of the light source unit

Difference in illumination techniques

The unique structure of the light unit prevents "chromatic aberration" (that is, shifting or blurring in color) so you can accurately see the operation site.

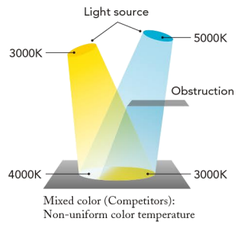
- Lens method (Competitors)
  Because refraction indexes vary by wavelength, chromatic aberration occurs, shifting or blurring the color in the edges of the light field.
- Reflection method
  Luminescent method of the IXM Series. Chromatic aberration does not occur in the edges of the light field.


Lens method (Competitors):
Has chromatic aberration

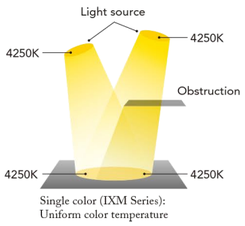

Reflection method (IXM Series):
No chromatic aberration

Maintaining a uniform color temperature

When mixing LED elements with varying color temperatures, a uniform color temperature cannot be maintained, such as how color shadows are formed when the light is blocked. With IXM Series, single color LED elements allow for accurate color detection.



Mixed color (Competitors):
Non-uniform color temperature



Single color (IXM Series):
Uniform color temperature

Light with "zero flickering" reduces strain on your eyes

Commonly-used lights adjust their brightness by repeatedly turning on and off in an extremely short interval (AC lighting, PWM control). However, the minute "flickering" strains your eyes, even if you're not aware of it. This also applies to the light environment of the operation room. With our DC lighting, the light can be constantly "ON", providing a light that does not flicker and is easy on your eyes.

If looking at a moving object


Afterimage occurs easily


Afterimage is prevented

Side panel

Explanation of each switch

(1) Turns the power on or off.

(2) Press the "Low (-)" switch to adjust the brightness.

(3) Press the "Hi (+)" switch to adjust the brightness.

(4) Displays the brightness level (numerical display on 8 levels).

(5) BOOST switch

Turns up only the LEDs in the center of the lamp head to maximum brightness.

Press the BOOST button to turn only the center 4 units to maximum brightness. You can use this if you want to illuminate light deep into the operation site.

(6) ENDOSCOPE switch

Turns on the light for endoscopic procedure.

Press the ENDOSCOPE button to turn on the light for endoscopic procedure.

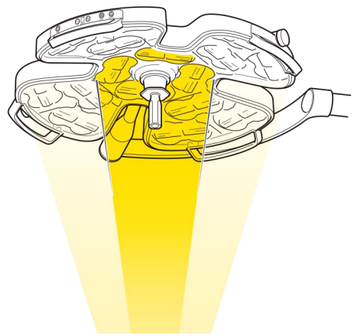
(7) ENVIRONMENT switch

Matches the color temperature of the base light (CK) to the operation light.

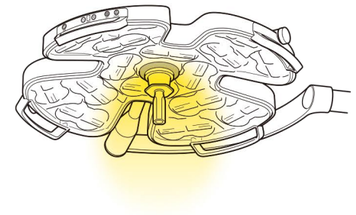
Setting the base light (CK) and the operation light to the same color temperature reduces the eye's chromatic adaptation (strain for focusing) caused by the color temperature gap between the operation site and the space, and can reduce eye strain.

* The base light (CK) is sold separately.
* The ENVIRONMENT button is a function only installed when also equipped with the base light (CK).

(5) Illustration with the BOOST switch pressed



(6) Illustration with the ENDOSCOPE switch pressed



Configurations

CJ16

CJ12

CJ12-MH

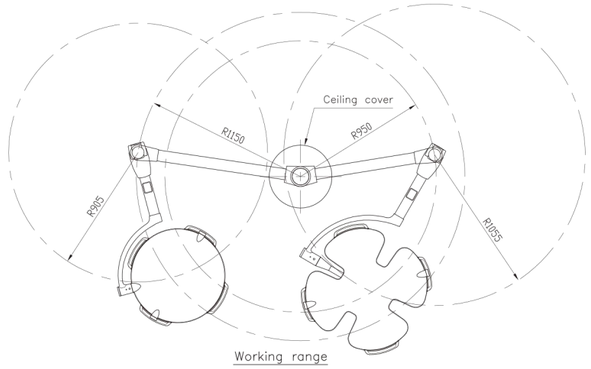
CJ16-TV55MY

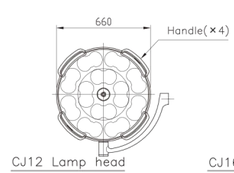
CJ1612

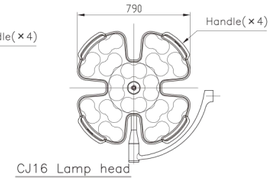
CJ1612-T6MP

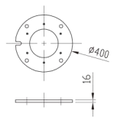
* Other configurations can be arranged to meet your installation plan. Please feel free to contact us.
* For details about the TV camera mounted arm or monitor mounted arm, please refer to the separate information.

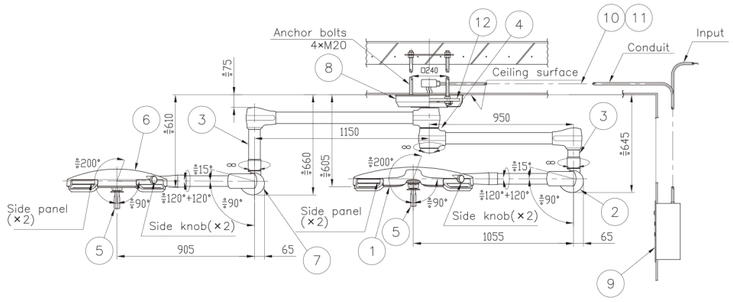
External drawing











No.	Components
1	CJ16 Lamp head
2	Balance arm
3	Vertical support tube
4	Radial arm
5	Center handle
6	CJ12 Lamp head
7	Balance arm
8	Ceiling cover
9	Wall panel / box
10	Conduit
11	Conduit
12	Mounting disk

Specifications

Item/Model	CJ16	CJ16H	CJ12	CJ12H
Composition	Lamp head + Radial arm + Vertical support tube with Balance arm + Wall panel/box			
Light head diameter	Approx. 790 mm		Approx. 660 mm	
LED technology	"Ultra-high color rendering LEDs"			
Illumination method	Reflection method			
Number of units and LED devices	LED units:16 LED devices: 64		LED units:12 LED devices: 48	
Central illuminance (Ec / at 1 m)*1	140,000Lux		100,000Lux	
Irradiance (at 1 m)	545 W/m^2 (Maximum)		385 W/m^2 (Maximum)	
Light field diameter (d10)	ϕ 220mm			
Color temperature (K)	4,250±250K			
Color rendering index	Ra: 96 (Typical value), R9: 96 (Typical value)			
Adjustment range of light intensity	8 levels (from 30 to 100%), on the WALL PANEL / BOX or side panel			
Adjustment range of focus	700 to 1,500 mm, on the sterile center handle and focus knobs (2 locations)			
LED service life	40,000 hours (up to 70% light intensity)			
Permissible environmental conditions	Ambient temperature: 5 to 35°C, Relative air moisture: 30 to 70%, Air pressure: 800 to 1,060 hPa			
Rated input voltage	AC100-240V 50/60Hz			
Power consumption	150VA	155VA	120VA	125VA
Fuse rating	3.15A		2A	
High definition TV camera	-	○	-	○

*1: The described values are the illuminance after leaving the lamp on for 3 hours.
* Product design and specifications are subject to change without prior notice due to product improvements, etc.

WALL PANEL / BOX

WALL PANEL & BOX

IXM Series CJ operation light is controlled by a WALL PANEL / BOX. Use the WALL PANEL / BOX for turning the power on or off, adjusting the brightness (from 1 to 8), and turning the ENDOSCOPE switch on or off.

- External dimensions
  Standard WALL PANEL / BOX: W280 × H280 × t1.5 mm
  Or: W300 × H400 × t1.5 mm

Front view of the wall panel