



FIRST LED

The first one, the original one!

RIMSA

The art of innovation

Right from its earliest days, RIMSA has always had a clear goal: to satisfy surgeons' needs. RIMSA is fully aware that the key to meeting this goal is INNOVATION.

Cutting-edge solutions designed by our engineers combine revolutionary new technology with consolidated concepts, such as WHITE LIGHT and INDIRECT LIGHT, as used in the RIMSA PentaLED series.

Designers of the world's first scialytic lamp using LED technology (patented in September 2002), RIMSA now applies the experience

it has gained over the years to its new PENTALED **E-Series**.

E-Series (PentaLED**81**, PentaLED**105** and PentaLED**30E**) is a highly innovative and superior performance line of scialytic lamps and is a natural evolution of the acclaimed PENTALED series.

RIMSA remains true to its origins, over seventy years later: the first, the only and the most original when it comes to bright new ideas.





MSA

PERITALEO

Man and Light

Light has a crucial affect on man's ability to work.

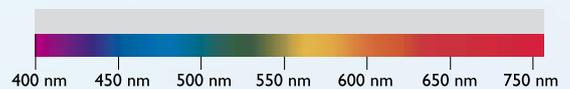
Proper lighting makes for comfortable working conditions, reduces stress levels, minimises the feeling of tiredness and increases productivity.

The quality of artificial lighting is, therefore, of the utmost importance and is directly proportional to the difficulty of the tasks required of us. The most important factor when considering artificial light is the colour rendering index (CRI). This is an index that measures the capacity of a light source to reproduce the true colours of the illuminated object faithfully. A CRI value of 85 or more is normally held

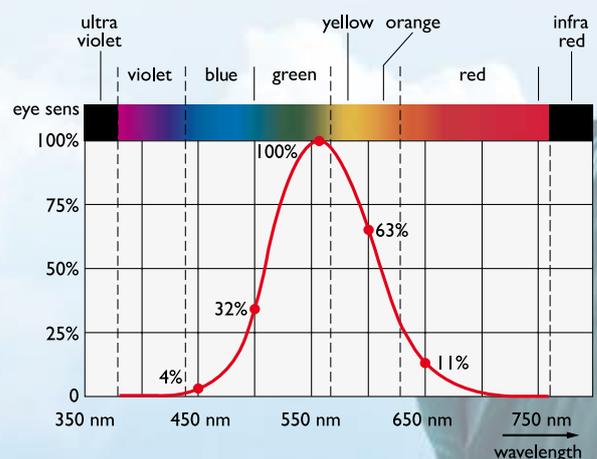
to be high and indicates that the light source has good colour rendering properties. This value has been studied by the CIE (International Commission on Illumination) and is the minimum requirement for surgical lamps in the relevant International Electrotechnical Commission standard (IEC 60601-2-41). It is obtained from the average of eight different colours (R1 to R8), given that the human eye is not as sensitive to all the various wavelengths in the same way.

Human eye sensitivity curve

The spectrum of electromagnetic radiation visible to the human eye ranges from 380 nm to 780 nm. (Fig.1) The human eye is most sensitive to radiation at roughly 550 nm (yellow-green), with visibility levels dropping rapidly either side of this towards ultraviolet and infrared. (Fig.2) When all the visible radiation is combined, we get the "sensation" of white light.



Picture 1. Visible wavelength



Picture 2. Human eye sensitivity curve.

RIMSA, inspired by nature, has chosen the 5.000K colour temperature, a white light similar to sunlight at Zenith for its Led lamps.

The importance of light during surgeries is related to the need to guarantee the reliability of the visual information perceived by the surgeon during the operation.



PENTALED E-series

RIMSA PENTALED 30E



RIMSA PENTALED 81



RIMSA PENTALED 105



E-WHITE

White light

Nature has always inspired man's every discovery! The sun is the light source par excellence and its rays emit monochromatic light, i.e. identical colour. Using this as a starting point, RIMSA has designed lamps that use only white light LEDs to avoid the risk of surgeons perceiving variations in the colour temperature (°K) within the operating field and to prevent unnecessary coloured shadows.

E-COMFORT

Indirect light

The use of indirect light makes for:

- 3D illumination of the operating field
- no shadows
- no risk of dazzling

E-VIEW EXTENDED-VIEW

E-View, the art of innovation

E-View is an innovative lens that lets the surgeon expand/narrow the illuminated operating field electronically, without altering the intensity of the light at the centre of the field (Ec).
Adjustment of the luminous field is one of the priority requirements of a surgeon's lamp.



The **indirect light** provided by all PentaLED lamps guarantees cold light, depth and no stress or dazzling for the surgeon. This is due to especially calculated parabolic dishes that reflect the entire spectrum of light emitted by each LED lamp in a punctiform manner, without dispersion.

This means:

- fewer LEDs are needed,
- lower irradiated heat in the operating field.

Thanks to the physical principle of indirect light, the surgeon and his/her assistants are never disturbed by the light and can operate without stress to the eyes and, most importantly, without becoming dazzled.



Ideal for the following surgical procedures:

- thoracic surgery
- abdominal surgery
- caesarean births

In all the above procedures, the surgeon must be able to operate in an extensive field lit with high intensity light. An additional lens called **E-View** (Extended-View) makes it possible to expand the lit field to up to 32 cm with 6000 Lux at the edges without affecting the light intensity at the centre (Ec).

The graph here is a faithful representation of **E-View's** performance levels.



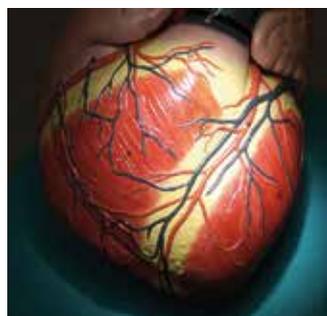
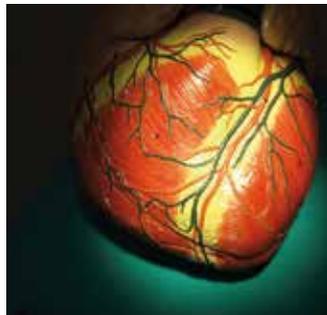
cm.

Professionalism and quality distinguish all RIMSA products: the result of more than seventy years' experience in the field.



Cold light

Any increase in thermal irradiation in the operating field is proportional to the number and power of the LEDs used. RIMSA uses a reduced number of LEDs thanks to the concept of Indirect Light.



5000°K – 4500°K

By simply pressing the digital key **K** on the membrane keyboard, the surgeon can choose between two different white light temperatures – 5000°K and 4500°K – without altering the light intensity.



 **-DEEP**

E-Deep (deep light)

The centre of the lamp is fitted with an extra 9-LED module with special parabolic dishes specifically designed to reflect deep light. **E-deep** means the surgeon can operate with perfect 3D lighting, especially in cavities.



EndoLed

The **EndoLed** function provides comfortable lighting during endoscopic surgery. When enabled, this function lights up a single module whose light intensity and colour temperature can be adjusted at will.



E-glass

The light source is protected by **E-Glass**, a light diffusing screen made from clear tempered glass and coated with a special high strength film to avoid shards falling into the operating field in the unlikely event that it shatters. The glass is non static, scratchproof and does not yellow with age, unlike conventional polycarbonate screens.



Laminar air flow

The domed shape and, most especially, the ultra-low surface heat of the aluminium housing guarantee free flowing air without obstacles or any disturbance of the laminar flow. In fact, very hot surfaces lead to convection which transforms streamline air flow into turbulence causing drag.



Mechanical testing and safety

Aluminium structure made to an exclusive RIMSA design. The vertical multi-movement arm has been subjected to mechanical testing involving 40,000 continuous movements to guarantee the surgeon total safety during use. The absence of any holes and apertures means the lamp is safe, hygienic and easy to clean.



Italian components, service and spare-parts

Carefully selected distributors guarantee full availability of spare-parts and technical service. Professionalism and quality distinguish all RIMSA products: the result of more than seventy years' experience in the field.



RIMSA PENTALLED 81

PENTALLED⁸¹ is a hi-tech product designed to guarantee excellent performance levels.

81 elliptical reflectors split into 9 modules, each containing 9 LEDs. The lamp lens is designed to guarantee perfectly focused lighting, i.e. without the need to focus the light every time the dome is moved. The light is pre-focused at different distances (from 80 cm to 200 cm). The **E-View** system lets the surgeon adjust the extent of the lit field to get the right type of light for each surgical procedure. The light structure of the lamp makes it easy to handle and yet still very stable.

The controls on the membrane keyboard activate the following functions:

- colour temperature (5000°K or 4500°K)
- brightness control (up to 160 Klx)
- lit field adjustment
- switching on/off
- **EndoLed**, a special type of light that facilitates endoscopic operations. The surgeon can select the exact brightness and colour temperature required

The modular construction of the electronic board that feeds the LEDs guarantees

continuous light, even in the unlikely event that a LED or board component should fail.

Smooth 360° rotation with slip-ring contacts for power transmission.

PENTALLED⁸¹ is a secondary lamp for surgeons, classed as a system in the two-satellite version. Complies with European Directives 93/42/EEC and 2007/43/EC and bears the 'Class I - Medical Device' CE marking.



 -WHITE

 -COMFORT

 -VIEW
EXTENDED-VIEW

 -DEEP





RIMS PENTALED 105

PENTALED**105** is the top of the range product.

PENTALED**105** is the top of the range product. It has a central module like the PENTALED**81** lamp and 4 side petals, each fitted with 6 LEDs radiating outwards. This configuration offers two great advantages:

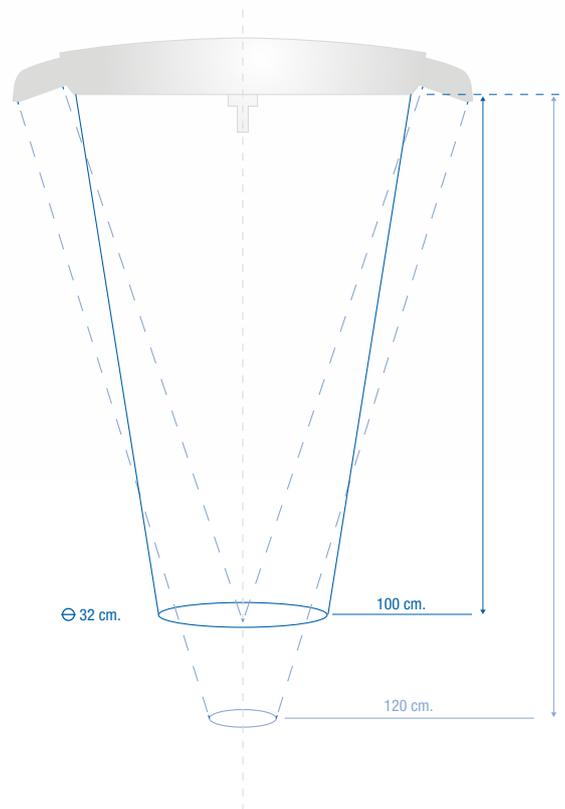
- Increased scalytic effect
- Increased depth of field

thanks to the double focalisation E-Focus

The central and side modules are designed to provide lighting at two different focal distances and thus guarantee greater depth of light and constant

light intensity without losing focus. The **E-Deep** module is fitted at the centre of the lamp: this has 9 LEDs with special parabolic dishes designed to reflect the light at depths. **E-Deep** means the surgeon can enjoy excellent 3D lighting, especially in cavities.

The **E-View** system lets the surgeon adjust the extent of the lit field to get the right type of light for each surgical procedure.





 -WHITE

 -COMFORT

 -VIEW
EXTENDED-VIEW

 -DEEP



RIMSA PENTALED 30E



PENTALED**30E**: compact size, great performances

PENTALED**30E** is especially recommended for operating theatres where the surgeon needs a small lamp to avoid interference with other overhead equipment.

Excellent for oral and maxillofacial surgery and aesthetic plastic surgery. It has 30 elliptical reflectors split into 6 modules,

each containing 5 LEDs, providing 160,000 Lux. An aluminium ring runs around the dome for easier positioning. The **E-View** system lets the surgeon adjust the extent of the lit field to get the right type of light for each surgical procedure.



 -WHITE

 -COMFORT

 -VIEW
EXTENDED-VIEW



Optional solutions

Integrated solutions for the surgery of the future

By operating with the most prestigious international hospital complexes, RIMSA has acquired extensive know-how in the surgical field, designing innovative solutions aimed at satisfying customer demands.

That is why we are also able to offer optional solutions such as: monitor holding arms, TV shooting systems with TVCC HD and SD, remote-control interfaces both by means of cable and IR (infra-red) remote control and UPS units.

We also devise personalised solutions for installing our lamps in operating theatres and mobile hospitals with very low ceilings – up to heights of 220 cm.

TVCC camera



Support monitor arm



IR remote control



Wall control panel



81 105 30E

Performances

Light intensity at 1 m distance (Ec)	160 Klx	160 Klx	160 Klx
Color temperature: double selection	4500 / 5000° K	4500 / 5000° K	4500 / 5000° K
Color rendering index (CRI)	96 Ra	96 Ra	96 Ra
R9	≥ 90	≥ 90	≥ 90
No. of Leds	81	105	30
Focus	FIXED	FIXED	FIXED
Light field diameter adjustable from – to – (cm)	19 – 32	20 – 32	16 – 30
Diameter adjustment	ELECTRONIC	ELECTRONIC	ELECTRONIC
d10 light field diameter where illuminance reaches 10% of Ec	190 mm	200 mm	160 mm
d50 light field diameter where illuminance reaches 50% of Ec	95 mm	100 mm	80 mm
Depth of illumination (L1+L2) at 20%	103 cm	100 cm	95 cm
Depth of illumination (L1+L2) at 60%	43 cm	47 cm	49 cm
Endoed light intensity min-max	5.000-20.000 lux	3.500-15.000 lux	9.000-25.000 lux
Total radiated energy Ee where the illuminance reaches max level (W/m ²)	392	410	299
Ratio between radiated energy Ee and illuminance Ec (mW/m ² lx)	2,45	2,56	2,30
Radiated UV energy with wavelength less than 400nm (W/m ²)	0,002	0,002	0,002
Average Led life	> 50.000 hours	> 50.000 hours	> 50.000 hours

Electrical data

Primary alternating voltage (V a.c.)	100 - 240	100 - 240	100 - 240
Secondary continue voltage (V d.c.)	24	24	24
Frequency (Hz)	50 - 60	50 - 60	50 - 60
Absorbed power (VA)	120	160	50
Control of the illuminance (%)	25 - 100 in 10 steps	25 - 100 in 10 steps	25 - 100 in 10 steps

General data

Colour	RAL 9003	RAL 9003	RAL 9003
Directive	93/42/EEC*	93/42/EEC*	93/42/EEC*
Standards	IEC60601-2-41	IEC60601-2-41	IEC 60601-2-41
Classification of product (Medical Device)	Class I	Class I	Class I

Dimensions

Out reflector diameter (cm)	63	79	40
Useful lighting surface (cm ²)	1.782	2.352	712
Weight (kg)	47 kg.	51 kg.	39 kg.

Optional

Battery group with automatic charger	optional	optional	optional
SD TVCC camera	optional	optional	optional
HD TVCC camera	optional	optional	optional
IR remote control	optional	optional	optional
Wall control panel	optional	optional	optional
Arm and TFT Video	optional	optional	optional

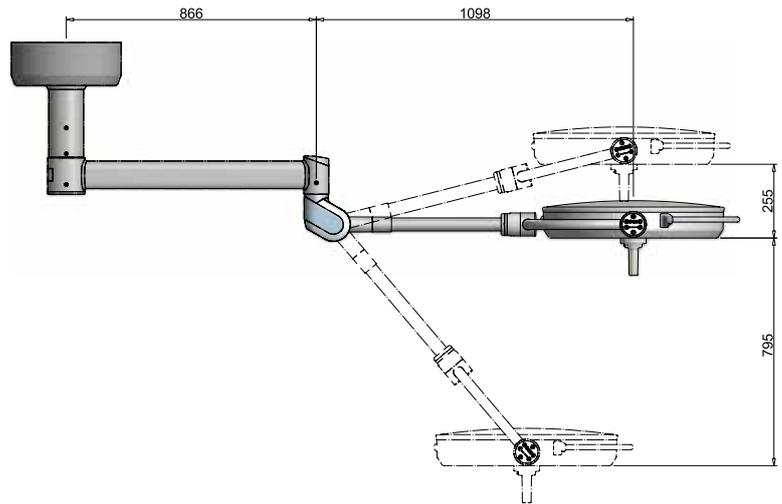
All lighting values are subject to a tolerance of ± 6% due to manufacturing and metrological reasons.

* main directive and further amendments

Versions

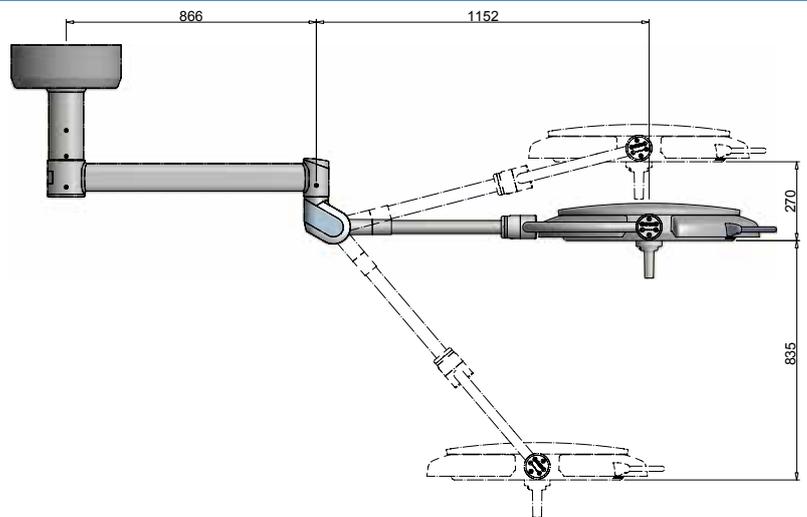
PENTALEO 81

-  -WHITE
-  -COMFORT
-  -VIEW
EXTENDED-VIEW
-  -DEEP



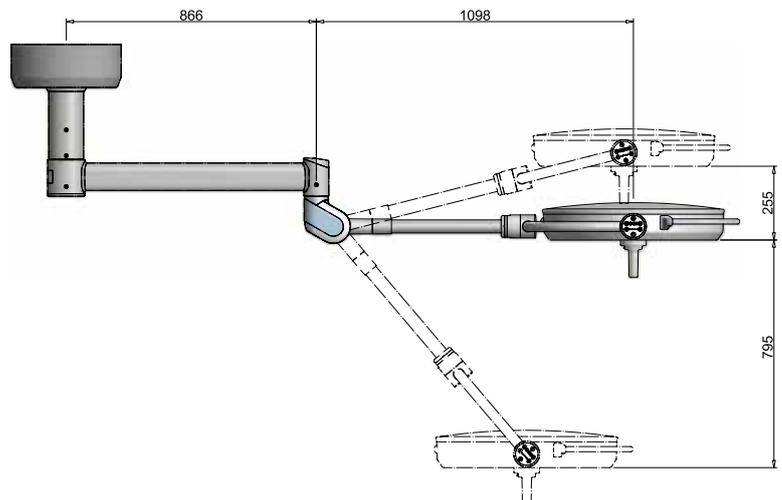
PENTALEO 105

-  -WHITE
-  -COMFORT
-  -VIEW
EXTENDED-VIEW
-  -DEEP

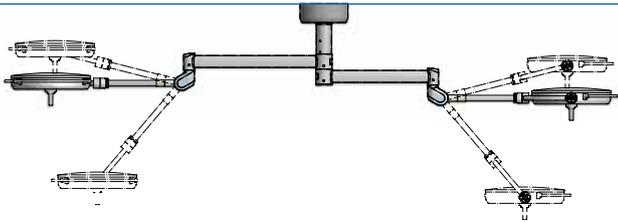


PENTALEO 30E

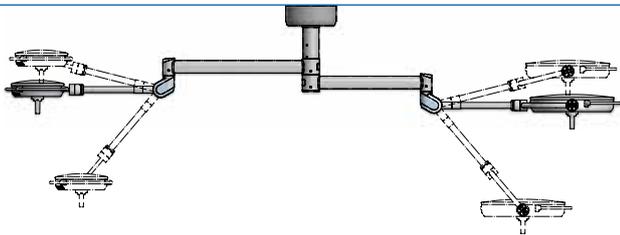
-  -WHITE
-  -COMFORT
-  -VIEW
EXTENDED-VIEW



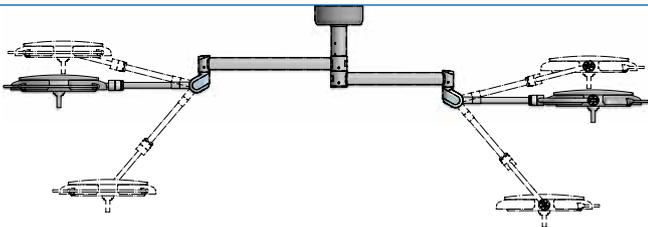
PENTALÉD81 + PENTALÉD81



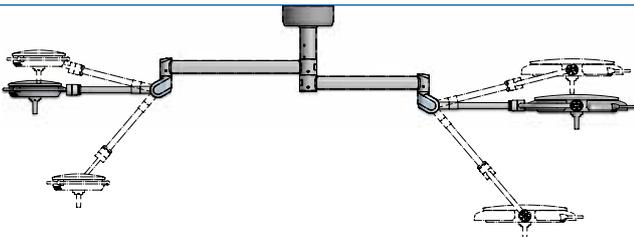
PENTALÉD81 + PENTALÉD30E



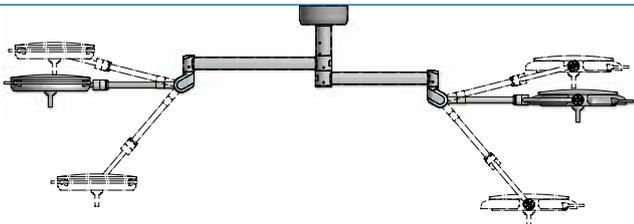
PENTALÉD105 + PENTALÉD105



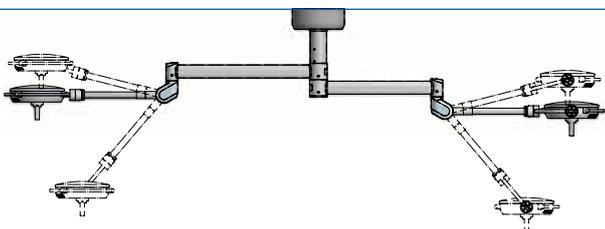
PENTALÉD105 + PENTALÉD30E



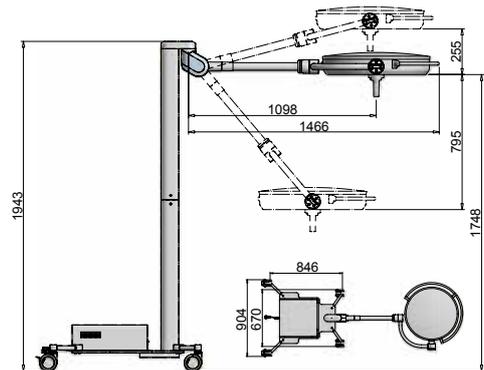
PENTALÉD105 + PENTALÉD81



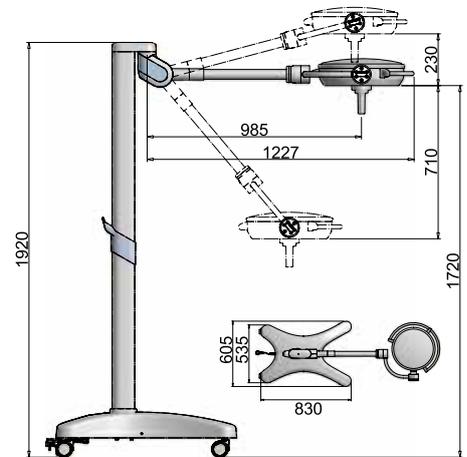
PENTALÉD30E + PENTALÉD30E



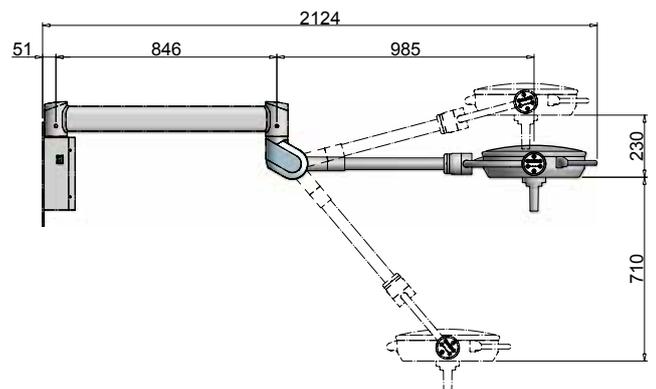
PENTALÉD81 mobile



PENTALÉD30E mobile



PENTALÉD30E wall mounted



RIMSA

 E-SERIES



Ref. October 2015