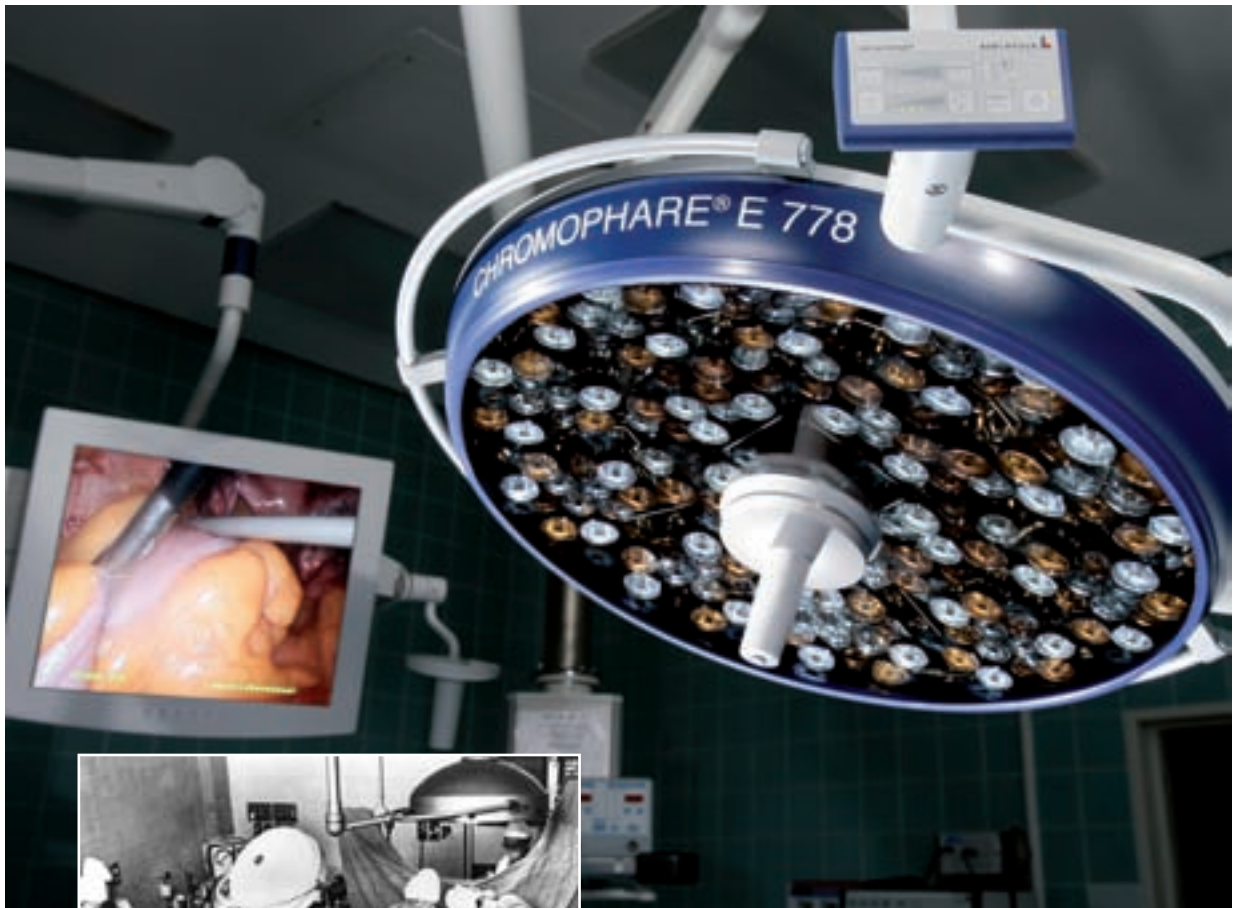


CHROMOPHARE® LED

E-series surgical lights
with LED technology

High performance for the future:



BERCHTOLD

A company with experience and a vision for the future

Dr. Christian Barnard oversaw the first heart transplantation in December of 1967. Even then, the BERCHTOLD CHROMOPHARE® was the lighting system of choice.

In the years thereafter, BERCHTOLD has become an operating room equipping specialist, throughout the world, with its visionary »Operating Room of the Future«.

The latest series of operating room lighting with LED technology is just one more indication of BERCHTOLD's innovative spirit – a spirit that was present back then, is present today and will continue into the future.

CHROMOPHARE® LED



A new way to illuminate the operating room

With the introduction of CHROMOPHARE® LED lights, the BERCHTOLD E-series of surgical lights has now been expanded. Complementing its excellent BRITe™ (halogen) and HID (high-intensity discharge) surgical lights, BERCHTOLD now has the most extensive selection of products for illuminating the surgical field that can meet any user's requirements and preferences. The innovative BERCHTOLD CHROMOPHARE® LED lights have ultra-modern, high-performance LEDs to provide outstanding illumination of the surgical field.



reddot design award
winner 2009

innovative & economical



High-performance LEDs

Excellent colour properties

Every single LED in a light module generates its own solid homogeneous light field, which overlap with those of its neighbours, providing a light with uniform illumination across the entire surgical light field; a light which will serve the most diverse surgical situations. The Spectronixx colour-optimisation filter perfects the spectral distribution of the light. A deliberate combination of cool and warm white high performance LEDs is utilised allowing for the optimal identification of differing tissue types. The flat and compact design ensures excellent illumination and provides a modern and highly functional aesthetic light head design.

A light without infrared

Keeps you cool

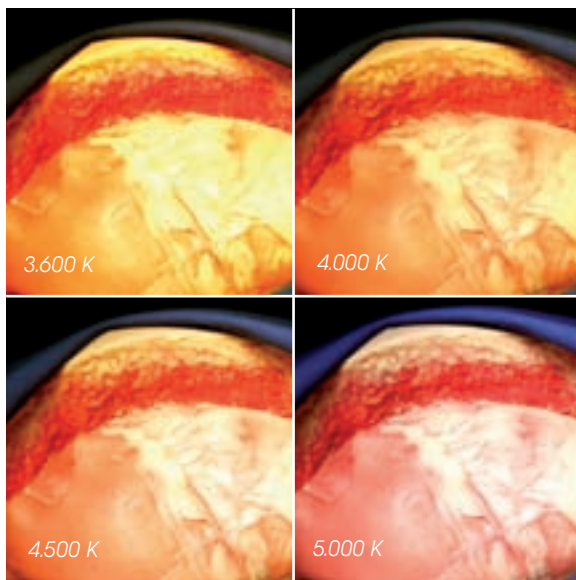
A cool light without infrared avoids the problem of heating the area around the surgeon's head, providing a pleasant working environment, even for surgeries that last a long time. The reduced heat developed by the light head also lends itself to integration within clean air ceilings.

Limitless service life

Extremely cost-effective

BERCHTOLD LED lights are efficient and economical simultaneously with an average service life of 25,000 h. Our high performance LEDs are low in power consumption and are mercury free, with less environmental impact compared to conventional light sources.

true colours & dimming



Color Select

You choose the colour properties, from a range of 3,600 – 5,000 K

Depending on the surgical situation, the surgical field can be illuminated with daylight-quality light, at the standard 4,500 K, alternatively you can choose to operate at a lower or higher temperature as preferred. This function can facilitate the clear distinction between various types of tissue and the perception of true tissue colours. Additionally, adjustable colour selection can help with concentration and the reduction of errors due to fatigue.

EndoLite® & GuideLite™

Optimal orientation

EndoLite® provides a solution for lighting with endoscopic procedures. With the press of a button, the operating room light can be switched from the normal operating room light to a second light source integrated in the light head. This light is directed towards the ceiling to provide ambient theatre lighting at low levels. Alternatively, GuideLite™ is a downward directed light with a dimmable illumination of approx. 5-10% of the main operating room light. This provides ideal illumination at the surgical field for precise placement of endoscopic instruments and ports.



ergonomic



An intuitive concept

Easy to use

You can control all functions quickly and intuitively via the operating panel on the light head and/or the wall:

- On / off switch
- Illumination
- EndoLite®
- GuideLite™
- Light field adjustment
- Color Select

With a multiple light head application, you can control the following functions synchronously:

- On / off switch
- Color Select
- GuideLite™

A sterilizable handle and light head rail allow for easy positioning of the light head. Integrated within the handle, a sensor allows for the adjustment of light field spot size and is activated in a way which eliminates unintentional adjustment when adjusting the position of the light head. The easy-to-move spring arms with 360° rotation around three axes lets you move the lights with ease and position them safely.

A compact design

Good compatibility with clean air ceilings

The flat and compact design of the light head with a smooth and sealed surface makes cleaning simple and reduces disruption of laminar air flow. Our specially developed suspension system with internal cable routing and an easily accessible cable retraction mechanism provide unlimited mobility in operating theatres with clean air ceilings.

reliable & long-lasting



High reliability

Lower costs

Long-lasting light sources with an average of 25,000 hours of service life have especially low maintenance requirements. Any mechanical malfunctions in the light head can be ruled out as the light field adjustment is purely electronic. High-quality LED optics and materials together with the proven BERCHTOLD standards of quality make CHROMOPHARE® LED an extremely reliable surgical light.

The technology

	CHROMOPHARE® E 778	CHROMOPHARE® E 668	CHROMOPHARE® E 558
Light head diameter	78 cm	64 cm	58 cm
Illumination	80,000 - 160,000 Lux	80,000 - 160,000 Lux	60,000 - 120,000 Lux
Light field diameter	15 - 29 cm	15 - 29 cm	15 - 29 cm
Light field depth (L1+L2)	75 cm	80 cm	85 cm
Colour rendering index (Ra)	95	95	95
Colour temperature (standard)	4,500 K	4,500 K	4,500 K
Color Select (optional)	3,600 - 5,000 K	3,600 - 5,000 K	3,600 - 5,000 K
Lights	168 LEDs, white, warm/cool	96 LEDs, white, warm/cool	72 LEDs, white, warm/cool
Average LED service life	25,000 hrs	25,000 hrs	25,000 hrs
Light head power consumption	300 VA at 120/230 V AC 200 VA at 24-28 V DC	250 VA at 120/230 V AC 160 VA at 24-28 V DC	220 VA at 120/230 V AC 140 VA at 24-28 V DC
Radiant energy	3,7 mW/m ² lx	3,7 mW/m ² lx	3,7 mW/m ² lx
Electricity	100/120/127 V(AC), 220/230/240 V(AC)	100/120/127 V(AC), 220/230/240 V(AC)	100/120/127 V(AC), 220/230/240 V(AC)
Temperature increase in head area	Approx. 1° C	Approx. 1° C	Approx. 1° C
Rotation	360°	360°	360°
Full-circumference rail	Standard	Standard	Standard
Sterilisable handle	Standard	Standard	Standard
EndoLite®*	Not available	Optional	Optional
GuideLite™	Standard	Standard	Standard
Assembly options	Ceiling, ceiling-mounted support	Ceiling, ceiling-mounted support	Ceiling, wall, mobile ceiling-mounted support
UL listing, CE	Yes	Yes	Yes
ChromoVision®	Optional	Optional	Optional

Measurements as per EN 60 601-2-41.

All technical light data have a max. tolerance of +/- 10%.

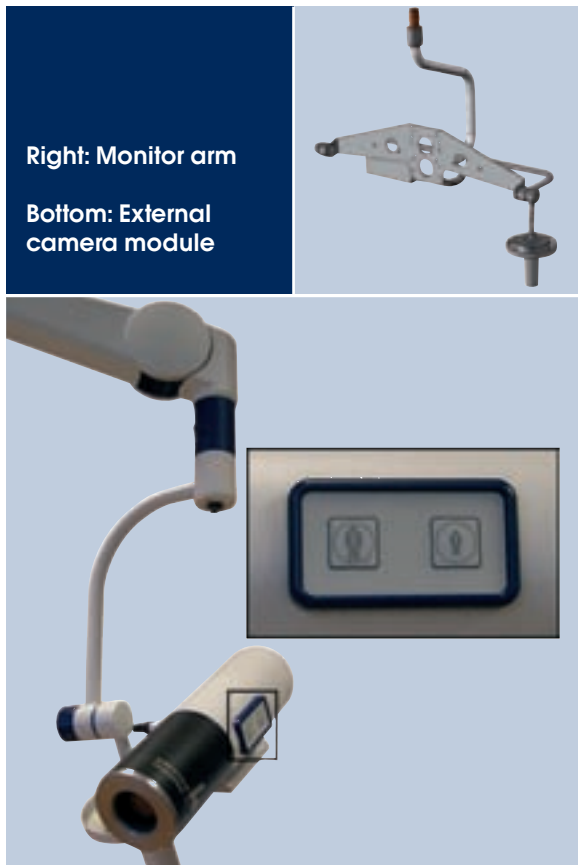
* Not available in combination with ChromoVision® ECO.

ChromoView™ monitor arms



Right: Monitor arm

Bottom: External camera module



The ChromoView™ monitor arms enable flexible medical monitor positioning.

- Compatible with all monitor sizes up to a 42"
- Monitor arms for larger screens are available on request
- Control handles are positioned at the centre of gravity providing feather-light positioning
- Wide cable opening for multiple video signal cables
- Assembly of one or two flatscreen monitors on one arm with wide swivel and tilt ranges
- Dual-monitor arm available with either freely movable or fixed monitor position
- Weight range spanning the standard 10 kg to 26 kg
- Arm for attaching external cameras is available

All major manufacturer monitors, true full HD solutions as well, can be directly purchased through us. Just ask! We would be glad to be of assistance.

The right system for every need

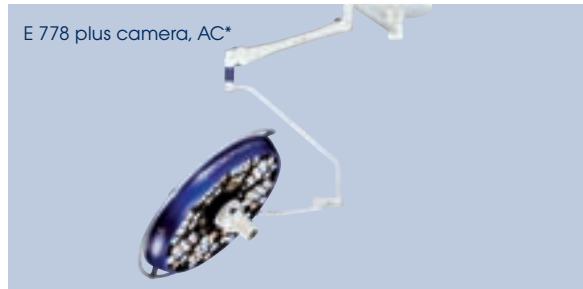
Any combination of CHROMOPHARE® surgical lights is possible in one to quadruple light configuration.

In the following you will find some examples of the wide range of models.

Wall light E 558, NC*



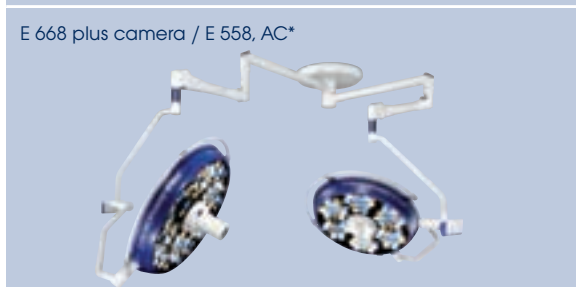
E 778 plus camera, AC*



E 558 plus camera, AC*



E 668 plus camera / E 558, AC*



E 558 / E 778, NC*



Single monitor / E 558 / E 668 plus camera, AC*



Mobile lights E 558 for autonomous options in every room, either with transformer or battery



Double monitor / E 558 / E 778 plus camera, AC*



*AC = double spring arm

*NC = single spring arm for greater range of motion with low ceilings

Communication and ...



Mobile control device for operating camera functions



Leveraging modern information and communications technology improves the availability of medical knowledge and facilitates interactive cooperation between the operating theatre and other facilities for educational purposes or consultation with experts. The ORICS® communications solution transforms the ChromoVision® integrated camera system and other camera sources into a video communications system with a wide range of application possibilities.

ChromoVision® camera systems

ChromoVision® ECO – camera system with manual zoom. The single-chip CCD camera system is highly economical and designed for universal applications.

ChromoVision® 1 C – camera system with full control options. Developed for professional applications, the single-chip CCD camera system is characterised by excellent image quality.

ChromoVision® HD – the camera system with full control options meets the highest standards of image quality and is ideal for all professional applications. The HD camera module captures images with more than 2 million pixels; five times higher resolution compared to traditional systems. Additionally, images on HD monitors can be viewed effectively using a 16:9 format.

Highlights:

- Image capture with the highest quality
- Auto / manual focus, white balance and shutter setting
- Manual light field adjustment
- Optical zoom
- Mobile control device for operating camera functions
- Serial interface
- Sterile handling

... Visualisation



ORICS® Communications systems

Live transmission in television picture quality

- Site-dependent information exchange, live and in real time
- Easy integration in existing networks
- Increased workflow efficiency
- Quality assurance with documentation of all relevant data
- Better decision-making using hard data

The technology

	ChromoVision® ECO	ChromoVision® 1 C	ChromoVision® HD SD
Image sensor	1/4 type super HAD CCD	1/4 type super HAD CCD	1/3 type HD CMOS
Video standard	PAL or NTSC	PAL or NTSC	PAL or NTSC SD-SDI standard SMPTE 259M ⁵
Pixels	Approx. 440.000 pixels	Approx. 440.000 pixels	Approx. 2.000.000 pixels
Resolution	460 lines (PAL), 470 (NTSC)	460 lines (PAL), 470 (NTSC)	460 lines (PAL), 470 (NTSC) 576i (PAL), 480i (NTSC) ⁵
Minimum working distance (wide angle - zoom)	10 - 800 mm	10 - 800 mm	10 - 800 mm
Image format	4:3	4:3	4:3 16:9 ⁵
Optical zoom	18x zoom	18x zoom	10x zoom*
Digital zoom	4x (72x plus optical zoom)	4x (72x plus optical zoom)	12x (120x plus optical zoom)
Focal length (mm)	f = 4,1 - 73,8 mm	f = 4,1 - 73,8 mm	f = 5,1 - 51,0 mm
Automatic electronic shutter (AES)	1/50 - 1/10.000 s	1/50 - 1/10.000 s	1/2 - 1/10.000 s
Signal-to-noise ratio (S/N) ¹	> 50 dB	> 67 dB	> 50 dB
White balance	Automatic	Automatic / manual	Automatic / manual
Focus	Automatic	Automatic / manual	Automatic / manual
Shutter opening / setting	Automatic	Automatic / manual	Automatic / manual
Complete image erection ²	No	Yes	Yes
Signal output	Y/C, 1,0 Vpp (Sync negativ)	Y/C, 1,0 Vpp (Sync negativ)	2x Y/C (Y = 1 Vpp, C = 0,258 Vpp); 2x Composite 1,0 Vpp 2x SD-SDI nach SMPTE 259M ⁵
RS 232 serial interface	No	Yes	Yes
Versions	In-light / external ³ camera	In-light / external ³ camera	In-light / external ³ camera
Camera operation	At the surgical light	Mobile control unit	Mobile control unit
Power supply to camera control	Via surgical light	Via surgical light	Via surgical light
Available with ORICS ^{®4}	Yes	Yes	Yes No ⁵

Measurements as per EN 60 601-2-41.
All technical light data have a
max. tolerance of +/- 10%.

¹ Measured at the control panel

² Only for in-light cameras

³ Upon request

⁴ Available only in select markets

⁵ For HD SD-SDI versions

*HD camera with 40x activated zoom
on request

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For over 85 years, BERCHTOLD has been a specialist in equipping surgical theatres. We offer best-in-class products, global experience in planning and project management, and individual service. Our products and services include:

- CHROMOPHARE® surgical and examination lights
- ChromoVision® video and camera systems
- ChromoView™ monitor arms
- OPERON® operating tables and accessories
- ORICS® telemedicine
- SUPERSUITE® all-round, customised OR solutions
- TELETOM® ceiling supply units
- 3D-OR™ design software
- Development, consulting, project management
- Service and installation by the best-trained specialists

We look forward to hearing from you and helping you in planning and undertaking your next OR equipping project.



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