Mach M3

Dr. Mach
Medical lighting
+Technology

Mach M3

Operating light system with evident advantages

Mach M3
Mach M3 with video system

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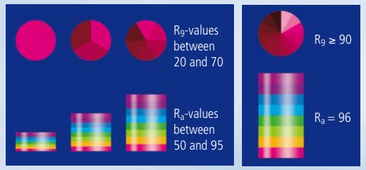
OPERATING LIGHTS

Advantages



Conventional lighting systems

Dr. Mach light system R96

Light quality and optics

Superior colour rendition

With a previously unattainable colour rendition $R_a = 96$ and $R_9(red) \geq 90$ you easily see the tiniest nuances of colour in tissue. For recognizing the exact colour spectrum of the wound the exact rendition of the red colour range is essential. $R_9(red) \geq 90$ means for the surgeon a visibly better recognition of details. The colour spectrum of the wound is rendered naturally. The OT-light clearly provides welcome relief for your eyes.

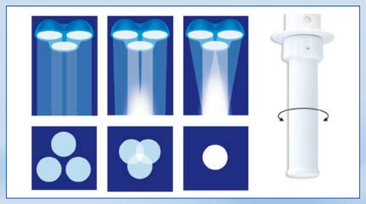
Multi-reflector system

Reflectors arranged in circular position increase as multiple-reflector system the contrast of the light.

Duo-Focus-Technology:

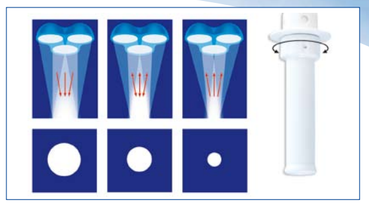
Merging of the individual luminous fields

By turning of the sterilizable handle the reflectors swivel. The three light fields are joined and overlap to one field with increased light intensity.


Mach M3 operating light

Focussing (optional)

By turning of the adjustment ring at the sterilizable handle the bulbs are moved inside the reflector up and down. The focus-sable light beam allows a punctual illumination of deepest wound channels with hight intensity and an exact matching of the light field diameter with the size of the wound field.


Mach M3 operating light

Additional comfort

Multi-facetted reflector system

Over 3000 facettes per reflector guarantee a homogenous light field and avoid disturbances through shadows in the light field.

Cool light

Coated cold light reflectors reduce in connection with dielectri-cally coated cold light filters the heat radiation to a minimum. The unwanted infrared radiation of the light source is not reflected by the reflectors but released to the upper side (ceiling). The heat increase under the lamphead is avoided. The surgeons head area remains cool.

Flow properties

The form of the housing shows excellent flow properties and produces optimum conditions for laminar flow systems.

Easy maintenance

Without tools and with only a few steps the lamp housings can be opened to have access to all system components. Due to the module technology all components can be easily exchanged. Within 30 seconds you exchange the bulb. The housings are easy to clean.

Housing of die-casted aluminium

The material guarantees shock resistance and long life. The heat is emitted through the upper housing part to the ceiling, thus negligible heat in the surgeon's head and shoulder area.

Mach M3 operating light

The light beams of the three reflectors can be merged by the sterilizable handle and – optionally – also focussed.

Mach M3 with ceiling fixation

Mach M3 with ceiling fixation and central spring arm for room height < 2,80 m

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Mach M3 F

Merging of lig

Superior colou

Multi-facetted

Cool light

Optimum flow

Easy maintena

Housing of die

The material guara
through the upper
surgeon's head and

Mach M3 DF

Additionally to the

Focussing

- punctual illumina
- exact adjustmen

Options ag

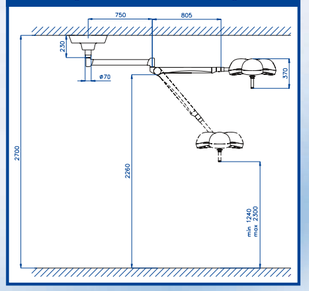
Focussable DF

Electronic ligh with on/off-sv

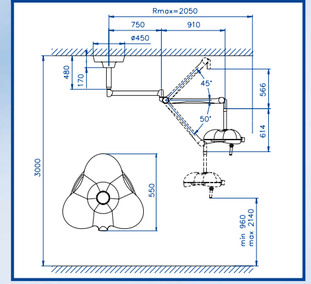
Mechanical or

Mach M3 operating light

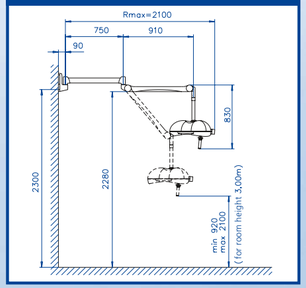
Ceiling fixation with central spring arm



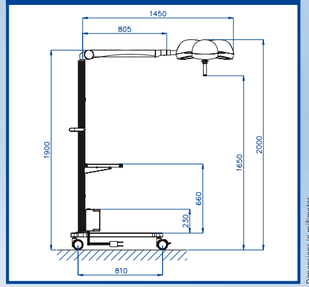
Ceiling fixation



Wall fixation



Mobile light with four castors



Dimensions in millimeter

Mach M3 operating light

The light beams of the three reflectors can be merged by the sterilizable handle and – optionally – also focussed.

Mach M3 with ceiling fixation

Mach M3 with ceiling fixation and central spring arm for room height < 2,80 m

Mach M3 with cardanic suspension and wall fixation

Mach M3 mobile with four castors

Performance description

Mach M3 F

Merging of light fields

Superior colour rendition

Multi-facetted reflector system

Cool light

Optimum flow properties

Easy maintenance

Housing of die-casted aluminium

The material guarantees sturdyness and long life. The heat is emitted through the upper housing part to the ceiling, thus negligible heat in the surgeon's head and shoulder area.

Mach M3 DF

Additionally to the advantages of the F-model:

Focussing

- punctual illumination of deepest wound channels
- exact adjustment of the light field to the size of the wound area

Options against surcharge

Focussable DF-model

Electronic light intensity control with on/off-switch

Mechanical on/off-switch at the lamphead

Handling

3 functions via touch panel:

- on/off
- focussing
- light intensity control

Technical data

Mach M3 light system[1]	Mach M3 DF[2]	Mach M3 F[3]
Light intensity Lux at 1 meter distance	130.000	100.000
Colour rendering index R_a[4] at 4300 Kelvin	96	96
Colour rendering index R_9[5] at 4300 Kelvin	≥ 90	≥ 90
Focussable size of the light field (in cm)	12 - 30	17 - 28
Colour temperature (Kelvin)	4300	4300
Electronic light intensity control at the lamphead	surcharge	surcharge
Photometric radiation equivalent	280 lm/W	280 lm/W
Temperature increase in head area	2° C	2° C
Total power consumption	150 W	150 W
Light source Halogen 22,8V / 50W	3	3
Working distance (in cm)	60 - 150	70 - 140
Height adjustment (in cm)	118	118

(1) external transformer
(2) DF-models with Duo-Focus system: merging of light fields and focussing
(3) F-models with merging of light fields
(4) R_a is an average of R_1 = burnt pink, R_2 = mustard yellow, R_3 = yellow green, R_4 = light green, R_5 = turquoise blue, R_6 = skyviolet, R_7 = violet, R_8 = lilac. Maximum value = 100.
(5) R_9 is the value for the rendering of the colour red. This is not used in calculating the general colour rendering index R_a. The values for conventional operating lights are between 20 and 70. Maximum value = 100. Values of more than 90 allow the surgeon to recognise details better in the wound area.

Mach M3 operating light with integrated video system

The Dr. Mach video system offers flexible rotation and a perfect picture.

Integrated OT-camera

... with TFT-monitor on separate arm

Free turnin

Integrated vide

The video- and contro
cables – but via the el

Advantages:
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The upgrading with th
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A Sony camera with 7
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Digital video sy

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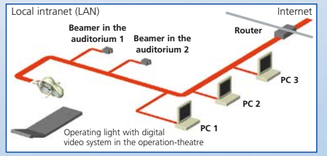
designed software thr
designated for the car

Mach M3 with video system

Camera remote control

- 72-fold zoom
- focus-control (automatic/manual)
- iris-control (automatic/manual)
- colour-control
- frozen image
- optional with image rotation

Example for diagnosis with the OT video system



Digital video system connected to the network

Mach M3 operating light with integrated video system

The Dr. Mach video system offers flexible rotation and a perfect picture.

Integrated OT-camera

... with TFT-monitor on separate arm

Output for video and control signals

Free turning and swivelling

Integrated video system

The video- and control signals are not transmitted conventionally by separate cables – but via the electric lines and sliding contacts of the operating light.

Advantages:
The operating light permits continuous rotary movement.
The upgrading with the camera is significantly cheaper and easier.
The camera doesn´t need readjustment dependig on the distance between lamphead and wound area as it is positioned centrally in the lamphead.

A Sony camera with 72-fold zoom, autofocus, autoiris and image rotation is used. Via remote control panel it can be controlled at the same time from an auditorium or other rooms.

Digital video system NEW

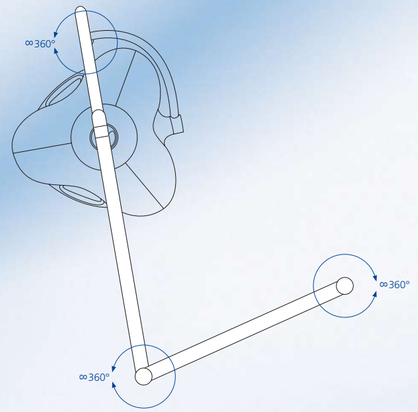
By a new digital camera remote control you can now receive digital video signals for the computer or network. Analog camera images are converted in MPEG4-video signals. These are available through a RJ45 interface at the remote control and a network cable.

Advantages:
You don´t need a video card any longer. The images can be directly saved on the computer if sufficient capacity is available. Nevertheless you can further record the signals on video or DVD-recorders. For this the remote control panel is equipped with two S-video (Y/C) connectors.

Available digital video systems

Video system DIGITAL ECO
Every computer in the netwotk has access to the video images and they can be saved on a hard disc drive of sufficient capacity.

Video system DIGITAL PC-CONTROL
As with the video system Digital Eco every computer in the network has access to the video images and they can be saved on a hard disc drive of sufficient capacity. Additionally the camera can be controlled by a specially designed software through the PC-screen. This is done by an IP-address designated for the camera remote control.



Continuous rotation

Technical data Dr. Mach camera	MFB-MO[1]	OFB-ST[2]
Colour image camera for visual communication (PAL / NTSC)		
Objectiv systems	72-fold zoom f = 4.1 to 73.8 mm F1.4-3.0 Auto Focus (integr. focussing system)	72-fold zoom Auto Focus (integr. focussing system)
Video exit 75 Ohm	VS1.0 Vp-p. Sync. Negative C: Burst 0.300 Vp-p VBS: 1.0 Vp-p Composite	VS1.0 Vp-p. Sync. Negative C: Burst 0.300 Vp-p VBS: 1.0 Vp-p Composite
Image points	752 (H) x 582 (V)	752 (H) x 582 (V)
Horizontal resolution	Over 460 lines	Over 460 lines
Vertical resolution	Over 400 lines	Over 400 lines
Humidity	20 - 85%	20 - 85%
Dimensions (Ø, Length)	80 x 150 mm	80 x 150 mm
Weight	900 g	900 g
Interference radiation in acc.with	FCC class A	FCC class A

(1) with remote control, with image rotation
(2) without remote control, without image rotation

No additional cables are needed for the camera.
By a special electronic design the power supply of the operating light is used for the transmission of the control- and video signals.