

VIDEO-SYSTEMS

ILLUMINATION INSUFFLATION DOCUMENTATION



www.mgb-berlin.de

MGB

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TOWER



Monitor
Flat Screen

MS-V
1 CCD-Camera

MS-L
Light Source 180 Xenon

ML-G
Insufflator

DISTO II
Digital Storage System

EC-2000 A
Endo-Cart

VIDEO-LUX

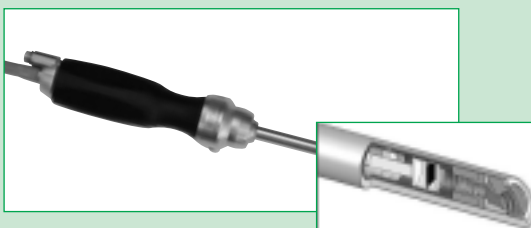
Order-No. 670-60000



New improved Camera-Head-Design with Zoom Lens!

Chip-in-the-Stick

- MGB Video-laparoscope provides always sharp image
- No need to adjust the focus
- The high end objective lens with extrem focal depth provides an always sharp image for standard laparoscopic procedures
- Ergonomically designed handle without the traditional 90° angle light guide connector
- Easy to operate console by OSD-function
- Low operating costs by using standard light guide components
- Video-Lux laparoscope is completely autoclavable
- No need to drape anymore
- Enhanced life time and less service costs
- Video-Lux console operates the Video-Lux laparoscope and MGB-single video camera EF II
- Both video systems can be operated parallel
- Everyone is able to adjust easily the image of Video-Lux after its own truth in colour, brightness and sharpness
- The image can be defined user specific
- USB II interface allows the video storage direct to PC or Notebook (option)



ZOOM coupler optional.



Head Button

- Individual selectable head button:
- "W/B": White balance
 - "Print": Remote to recorder device
 - "Sharp": Sharpness

Enhanced Image Quality

Chip-in-the-stick using newest technology to present best images from inside the body, by positioning the Digital Sensor (CCD) direct behind the objective lens. The traditional rod lens system is not used anymore. In consequence the image quality is enhanced by less distortion and provide higher contrast.

GENERAL

Order-No.	Set
670-60000	Video-Lux (PAL) – complete Set, 0°
670-61000	Video-Lux (PAL) – complete Set, 30°
670-60100	Video-Lux (NTSC) – complete Set, 0°
670-61100	Video-Lux (NTSC) – complete Set, 30°
Main Connection	
Power supply	~100 - 120 V/~200 - 240 V
Frequency	50 - 60 Hz
Power consumption	6 VA
Fuse (~100 - 120 V)	2 x T2.0 AL/250 V (IEC 127)
Fuse (~200 - 240 V)	2 x T1.0 AL/250 V (IEC 127)
Classification	
Safety class	1 with potential equalization connection
Protection	IP X 1 (console)
Type	BF
Approval	CE
Operating Conditions	
Operating temperature	+10°C ~ +40°C
Operating humidity	30% ~75%
Interface » Video-laparoscope «	
	2 x composite (BNC)
	2 x Y/C (SVHS)
	Optional USB II
Interface » EF II «	
	1 x composite (BNC)
	1 x Y/C (SVHS)
Extent of Delivery	
Video-Lux	High performance light guide
	Video-laparoscope Ø 10 mm
	Video-Lux console
	EF II camera-head
	Zoom lens

SPECIFICATION

Dimension and Weight » Console «	
Dimension (w/h/d)	400 x 115 x 345 mm
Weight	7.4 kg
Dimension and Weight » Video-laparoscope 0° «	
Working length	300 mm
Weight	550 g
Dimension and Weight » Video-laparoscope 30° «	
Working length	300 mm
Weight	790 g
Dimension and Weight » Camera-Head «	
Head dimension (d/l)	38 x 52 mm
Head-weight	250 g (with cable 3 m)
Lens connection	C-mount
Waterproof	IP X 7
1 Head button selectable	"W/B" or "Print" or "Gain"

Order-No.	Accessories
402-11512	High performance light guide
670-60200	Video-laparoscope 0° (PAL), Ø 10 mm
670-61200	Video-laparoscope 30° (PAL), Ø 10 mm
670-60400	Video-Lux-console (PAL)
670-60300	Video-laparoscope 0° (NTSC), Ø 10 mm
670-61300	Video-laparoscope 30° (NTSC), Ø 10 mm
670-60500	Video-Lux console (NTSC)
670-51030	EF II camera-head (PAL)
670-52030	EF II camera-head (NTSC)

ML-V 3 CCD ENDO-CAMERA

Order-No. 670-31400



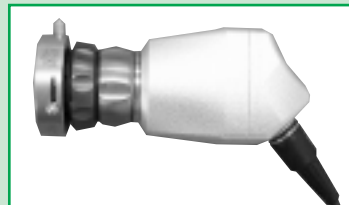
Specification

- 3 CCD Camera, 1/3" technology
- Full automatic control with digital signal processing
- Simple and intelligent key-function
- Automatic white balance control with **OSD (On Screen Display)**
- Horizontal 750 TV lines
- Waterproof Camera-Head
- Ergonomic Head-Design
- Optional digital interface **USB II (out)** incl. software

Intended Use

The Endoscopic Camera *ML-V* is intended to attach to standard endoscopes to permit visualization of body cavities, hollow organs and canals during endoscopic procedures. The endoscopic image can be displayed on any standard medical video monitor.

The preselected area will always guarantee a brilliant image in combination with different kind of endoscopes, being used in various endoscopic application.



3 CCD Camera-Head

With optical zoom.
f = 16-34 mm
(Order-No.: 470-28000)

ZOOM coupler optional.



Camera-Head

Two Head Buttons:
A: Remote
B: W/B, Gain, Freeze (selectable)



USB II out optional

Inclusive software.
(Order-No.: 670-31500)

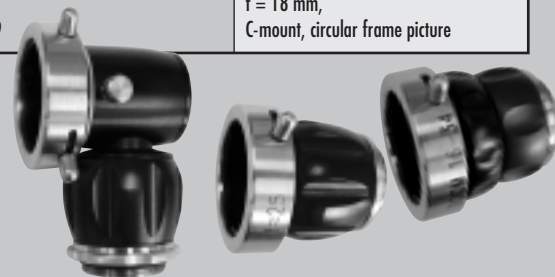
GENERAL

Order-No.	
670-31400	ML-V: 220 V/PAL
670-31401	ML-V: 110 V/PAL
670-32400	ML-V: 220 V/NTSC
670-32401	ML-V: 110 V/NTSC
670-31500	ML-V: USB II option
Main Connection	
Power supply	~100 - 120 V / ~200 - 240 V
Frequency	50 - 60 Hz
Power consumption	26 VA
Fuse (~100 - 120 V)	2 x T 2.0 AL / 250 V (IEC 127)
Fuse (~200 - 240 V)	2 x T 4.0 AL / 250 V (IEC 127)
Classification	
Safety class	1 with potential equalization connection
Protection	Camera-Head: IP X 7 waterproof
Type	BF
Approval	CE
Dimension and Weight	
Dimension (w/h/d)	400 x 160 x 360 mm
Weight	11.8 kg
Operating Conditions	
Operating temperature	+10° C ~ +40° C
Operating humidity	30% ~ 75%
Extent of Delivery	
ML-V	<ul style="list-style-type: none"> ■ S-VHS cable ■ BNC cable ■ RGB cable ■ Power cable ■ User manual
With USB II option	■ USB cable, software
Interface	
ML-V	<ul style="list-style-type: none"> ■ 1 x RGB ■ 1 x Y/C (S-VHS) ■ 2 x composit (BNC) ■ 1 x remote
ML-V with USB II option	Additional: <ul style="list-style-type: none"> ■ 1 x USB II (out)

SPECIFICATION

Main Unit	
Resolution	Horizontal 750 TV Lines
SNR	< 0.7 Lux
Min. of illumination	1.2 Lux
Automatic gain control	0 ~ 20 dB
Manual gain control	Set button
Shutter speed control	Automatic [1/60 ~ 1/10,000s]
Image sensor CCD	1/3" Interline CCD x 3
Pixel	768 x 494 (h x v) x 3
White balance	Automatic adjustment (Set button) on screen display confirmation
Brightness control	Area selecting control
Sharpness	Set button
Colour bar	Appear on monitor
Freeze function	Set by Head Button
CCD Camera-Head	
Head-dimension (w/h/d)	40 x 45 x 75 mm
Head-weight	320 g (incl. cable 3m)
Lens connection	C-mount
Waterproof	IP X 7
2 Head buttons (1 x selectable)	Button A: "print" Button B: "W/B", "Gain", "Freeze"

Order-No.	Accessories
	Video Camera Lens
470-23400	f = 18 mm, C-mount, circular frame picture
470-27400	f = 22 mm, C-mount, full frame picture
470-24400	f = 25 mm, C-mount, full frame picture
470-25400	f = 30 mm, C-mount, full frame picture
470-28000	ZOOM f = 16 - 34 mm, C-mount
	Urology Video Camera Lens 90°
470-30000	f = 18 mm, C-mount, circular frame picture



MS-V 1 CCD ENDO-CAMERA

Order-No. 670-15000



Higher Contrast

The Endo-Camera *MS-V* can provide an enhanced resolution. Even fine tissue structures can be visualized with its detailed transmission.

Great Light Sensitivity

Under difficult light conditions the Endo-Camera *MS-V* is showing a well illuminated picture. For small diameter telescope's the **GAIN-Key** should be used.

New Camera Head-Design

The Endo-Camera *MS-V* is specially designed for endoscopic procedures. The angled camera-head gives a perfect sense of up and down to the user. The new camera is much lighter and smaller. The head button is individual selectable.

White Balance Memory Function

The white balance setting is stored in the camera's micro-processor. Thus, the correct adjustment is kept even if the Endo-Camera *MS-V* is switched off.

USB II out

With **USB II**, you can directly connect the *MS-V* to PC. This allows to see and store the video on PC.



Head Button

Individual selectable head button: "W/B", "Print" and "Gain" (switch on the backside).



Moiré Function

Allows to use flexible Fibrescopes.



Freeze

Screen Splitting

Freeze and Screen Splitting

MS-V allows – controlled by a footswitch – **freeze** and **screen splitting** on the monitor for detailed comparison.

GENERAL

Order-No.	MS-V Standard-Version
670-15000	Color-system PAL
670-16000	Color-system NTSC
670-31500	USB II option
MS-V Freeze-Version	
670-15010	Color-system PAL
670-16010	Color-system NTSC
670-31500	USB II option
Main Connection	
Power supply	100 - 250 V AC (switch)
Frequency	50/60 Hz
Power consumption	25 VA
Fuse (~100 - 120 V)	2 x T 2.0 AL/250 V (IEC 127)
Fuse (~200 - 240 V)	2 x T 1.0 AL/250 V (IEC 127)
Classification	
Safety class	1 with potential equalization connection
Protection	IP X 1
Safety-class	BF
Approval	CE
Dimension and Weight	
Dimension (w/h/d)	380 x 70 x 340 mm
Weight	8.0 kg
Operating Conditions	
Operating temperature	+10° C ~ +40° C
Operating humidity	30 % ~ 75 %
Extent of Delivery	
MS-V	<ul style="list-style-type: none"> ■ S-VHS cable ■ BNC cable ■ RGB cable ■ Power cable ■ User manual
With USB II option	■ USB cable, software
Interface	
MS-V Standard-Version	<ul style="list-style-type: none"> ■ 2 x composit (BNC) ■ 2 x Y/C (S-VHS) ■ 1 x remote
MS-V Freeze-Version	Additional: <ul style="list-style-type: none"> ■ 1 x RGB ■ 1 x foot-pedal for freeze connector
USB II option	1 x USB II (out)

SPECIFICATION

CCD Camera Unit	
CCD - Sensor size	1/3 "
NTSC (h x v)	768 x 494/410.000 pixels
PAL (h x v)	752 x 582/440.000 pixels
Sensitivity	< 0.7 Lux
Shutter speed	Automatic control
CCD Camera-Head	
Head-dimension (d/l)	38 x 52 mm
Head-weight	250 g (with cable)
Lens connection	C-mount
Waterproof	IP X 7
1 Head button selectable	"W/B" or "Print" or "Gain"

Order-No.	Accessories
	Video Camera Lens
470-23400	f = 18 mm, C-mount, circular frame picture
470-27400	f = 22 mm, C-mount, full frame picture
470-24400	f = 25 mm, C-mount, full frame picture
470-25400	f = 30 mm, C-mount, full frame picture
470-28000	ZOOM f = 16 - 34 mm, C-mount
	Urology Video Camera Lens 90°
470-30000	f = 18 mm, C-mount, circular frame picture



ELICA II: VIDEO-CAMERA COMBINED WITH DUO LIGHT-SOURCE

Order-No. 670-51500



New improved Camera-Head-Design!

Higher Contrast

The Endo-Camera *ELICA II* can provide an enhanced resolution. Even fine tissue structures can be visualized with its detailed transmission.

Great Light Sensitivity

Under difficult light conditions the Endo-Camera *ELICA II* is showing a well illuminated picture. For small diameter telescope's digital filters allow to enhance the sharpness.

New Camera-Head-Design

The Endo-Camera *ELICA II* is specially designed for endoscopic procedures. The angled camera-head gives a perfect sense of up and down to the user.

White Balance Memory Function

The white balance setting is stored in the camera's micro-processor. Thus, the correct adjustment is kept even if the Endo-Camera *ELICA II* is switched off.

USB II out (option)

With USB II, you can directly connect *ELICA II* to a PC. This allows to see and store the video on PC.



Head Button

Individual selectable head button:
 ■ "W/B": White balance
 ■ "Print": Remote to recorder device
 ■ "Sharp": Sharpness (switch on the backside).



Moiré Function

Allows to use flexible Fibrescopes.



Brightness

Light-intensity regulation.



Freeze

Screen Splitting

Freeze and Screen Splitting

ELICA II allows freeze and screen splitting on the monitor for detailed comparison.

GENERAL

Order-No.	ELICA II Standard-Version
670-51500	Color-system PAL
670-52500	Color-system NTSC
670-31500	USB II option
ELICA II Freeze-Version	
670-51510	Color-system PAL
670-52510	Color-system NTSC
670-31500	USB II option
Main Connection	
Power supply	100-240 V
Frequency	50/60 Hz
Power consumption	400 VA
Fuse	2 x T 3.15 L/250 V (IEC 127)
Classification	
Safety class	1 with potential equalization connection
Protection	IP X 1
Type	BF
Approval	CE
Dimension and Weight	
Dimension (w/h/d)	350 x 400 x 140 mm
Weight	12.0 kg
Operating Conditions	
Operating temperature	+10° C ~ +40° C
Operating humidity	30 % ~ 75 %
Extent of Delivery	
ELICA II	<ul style="list-style-type: none"> ■ S-VHS cable ■ Power cable ■ BNC cable ■ User manual ■ RGB cable
With USB II option	■ USB cable, software
Interfaces	
ELICA II Standard-Version	<ul style="list-style-type: none"> ■ 2 x composit (BNC) ■ 2 x Y/C (S-VHS) ■ 1 x remote
ELICA II Freeze-Version	Additional: <ul style="list-style-type: none"> ■ 1 x RGB ■ 1 x foot-pedal for freeze connector
USB II option	1 x USB II (out)

SPECIFICATION

ELICA Camera Unit	
CCD - Sensor size	1/3 "
NTSC (h x v)	768 x 494/410.000 pixels
PAL (h x v)	752 x 582/440.000 pixels
Sensitivity	< 0.7 Lux
Shutter speed	Automatic control
CCD Camera-Head	
Head-dimension (d/l)	38 x 52 mm
Head-weight	250 g (with cable)
Lens connection	C-mount
Waterproof	IP X 7
1 Head button selectable	"W/B" or "Print" or "Sharp"
ELICA Light Source Unit	
HALOGEN Lamp	2 x 250 W
Color temperature	3.500 K
Life cycle of the lamp	50 h
Light output	Regulation
Light guide port	1 x universal light guide port 1 x MGB/Wolf

Order-No.	Accessories
	Video Camera Lens
470-23400	f = 18 mm, C-mount, circular frame picture
470-27400	f = 22 mm, C-mount, full frame picture
470-24400	f = 25 mm, C-mount, full frame picture
470-25400	f = 30 mm, C-mount, full frame picture
470-28000	ZOOM f = 16 - 34 mm, C-mount
	Urology Video Camera Lens 90°
470-30000	f = 18 mm, C-mount, circular frame picture



FENCER: THE COMPLETE LAPAROSCOPIC UNIT

Order-No. 670-11000

FOUR IN ONE

- Gas-Insufflator
- Video-Camera
- Light Source
- Irrigator

FENCER is a complete laparoscopic system. A combination of:

- Insufflator
- CCD Video-Camera
- Xenon-Light Source
- Irrigation

in one compact unit.

Each function working independently from the other. FENCER allows high performance for laparoscopic applications. Additionally, FENCER is designed for simple and user friendly operation.



Gas-Insufflator

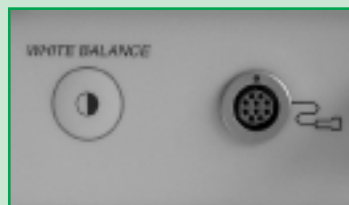
The 30 l-Insufflation part in FENCER is equipped with a precise electrical control for an optimal intra-abdominal working pressure. This allows exact working. Three selectable Flow rates of 1.5, 5 and 30 l/min are available for the exact control of the Insufflator.



Gas-Insufflator

High Resolution Camera by Digital Controlling

FENCER is based on the latest digital technology. The microprocessor controls brightness through shutter control and white balance that result in clear and sharp images for endoscopy everytime.



Video-Camera

Xenon Light Source with Manual Regulation

The 180 W Xenon Light Source provide illumination. The natural light – composed of the entire spectrum of white light – is the optimum for laparoscopic surgery. Users can replace lamps quickly and easily.



Light Source

Irrigation

The Irrigation part in FENCER has a high pressure Irrigation function. In combination with the MGB-Suction-/Irrigation instruments and easy handling, high flow Irrigation is guaranteed and constant.



Irrigator

GENERAL

Order-No.	FENCER - Versions
675 -11000	PAL -type camera, 220 V
675 -11001	PAL -type camera, 110 V
675 -12000	NTSC -type camera, 220 V
675 -12001	NTSC -type camera, 220 V
Main Connection	
Power supply	100 -120 V/200 - 240 V AC
Frequency	50/60 Hz
Power consumption	250 W
Fuse	2 x T3.15 A (250 V)/2 x T3.15 A (110 V)
Classification	
Safety class	1 Type BF
Type	BF
Approval	CE
Dimension and Weight	
Dimension (w/h/d)	530 x 200 x 440 mm
Weight	18.0 kg
Extent of Delivery	
FENCER (PAL - or NTSC -type)	<ul style="list-style-type: none"> ■ Camera -head, incl. cable ■ Silicon -tube for Insufflator ■ Silicon -tube for Irrigator ■ Regulator with manometer and snap -in -connector ■ Power -supply cable and BNC - cable
Light Source 180 W XENON	
Lamp type	Xenon 180 W
Lamp color temperature	approx. 6000 K
Lamp replacement	Side door, with cartridge
Life -cycle of lamp	approx. 500 hours
Manual regulation	
Irrigation	
Pressure	700 mbar
Insufflator 30 l	
Flow rate	~ 30 L/min. (maximum)
	1.5 L/min. (minimum)
Insufflation pressure	1 -30 mm Hg
Gas connection	MGB snap -in/DIN
Gas input pressure	4 -10 bar/High pressure (pressure reducer included)

SPECIFICATION

FENCER Camera Unit	
CCD - Sensor	Size: 1/3 "
NTSC (H X V)	768 x 494/410.000 pixels
PAL (H X V)	762 x 582/440.000 pixels
Sensitivity	< 0.7 Lux
Shutter speed	automatic control between: 1/60 -1/100.000 sec. (NTSC), 1/50 -1/100.000 sec. (PAL)
Waterproof	IP X 7
Horizontal resolution	450 TV -lines
Signal output	Y/C (S -video) x 1 at 75, Ω composite x 1 at 75 Ω
Lens connection	C -mount
Camera -head size (d x l)	38 x 45 mm
Camera -head cable length	2.5 m
Camera -head weight	250 g, incl. cable

Order-No.	Accessories
	Video Camera Lens
470-24400	f = 25 mm, for full-size-screen
470-28000	ZOOM f = 16-34 mm
402-11300	Light guide (for example): Ø 4.8 mm, length 2.3 m
686-00200	Spare lamp Xenon (180 W)
675-11203	Filter, 25 pieces
670-95300	Silicone -tube set for Insufflation
675-11201	Silicone -tube set for Irrigation
675-11202	Adapter for Insufflation

VIDEO CAMERA LENS

Video Camera Zoom Lens

- f = 16 - 34 mm



Video Camera Lens

- f = 18 mm (used in Arthroscopy, Urology, ENT)
- f = 22 mm (used in ENT)
- f = 25 mm (used in Laparoscopy)
- f = 30 mm
- f = 40 mm



Urology Video Camera Lens 90°

- f = 18 mm



GENERAL

SPECIFICATION

Order-No.	Video Camera Zoom Lens
470-28000	f = 16-34 mm

Video Camera Zoom Lens	
f = 16 - 34 mm	<ul style="list-style-type: none"> ■ Zoom ■ C-mount ■ Used in all endoscopic fields (parafocal) ■ One of the shortest and very light-weight zoom in the market

Order-No.	Video Camera Lens
470-23400	f = 18 mm
470-27400	f = 22 mm
470-24400	f = 25 mm
470-25400	f = 30 mm
470-26400	f = 40 mm

Video Camera Lens	
f = 18 mm f = 22 mm f = 25 mm f = 30 mm f = 40 mm	<ul style="list-style-type: none"> ■ Brilliant optic ■ High translucence ■ Quick endoscope coupling ■ Waterproof ■ C-mount ■ Ergonomic design

Order-No.	Urology Video Camera Lens 90°
470-30000	f = 18 mm

Urology Video Camera Lens 90°	
f = 18 mm	<ul style="list-style-type: none"> ■ Angled video lens with rotatable eyepiece-connector ■ Rotation lockable ■ Focal length f = 18 mm, circular frame picture ■ Connection to camera-head C-mount ■ One-hand operation ■ Air ventilation on ocular window ■ Soakable



Laparoscopy (Full Size)
with 1/3" CCD/f = 25 mm



Limited Size
Sinocopy Ø 4 mm/f = 22 mm



Arthroscopy/Urology (Circle Size)
Arthroscopy Ø 4 mm/f = 18 mm

ML-L LIGHT SOURCE 300 W

Order-No. 670-00400



**300 W Xenon
(150 W Halogen)**

Natural Illumination

300 W Xenon light sources provide illumination in daylight quality. The natural light – composed of the entire spectrum of white light – is the optimum for endoscopic surgery.

Automatic Light Adjustment

In combination with the camera the ML-L continually optimises the brightness for viewing flat and deep structures inside the body. The brightness may also be adjusted manually.

Lamp Exchange

The lamp has an average life of 500 hours. A counter is situated on the front display. With integrated replacement indicator: 3 integrated silent fans control the temperature stability.

Safety Operation

The 300 W Xenon lamp and the 150 W Halogen lamp for emergency guarantee safe operation.



Universal Light Guide Connector Port

The universal light guide connector port allows the use of different light guides without paying any attention for having the right adapter.



Emergency Lamp

An integrated, unique 150 Watt emergency lamp for backup.



User Friendly Display

The ML-L control panel is robust, clearly and ergonomically arranged.

GENERAL

<i>Order-No.</i>	
685-00400	ML-L Light source
<i>Main Connection</i>	
Power supply	90-260 V AC
Frequency	50-60 Hz
Power consumption	420 VA
Fuse	2 x T 6.3 AL / 250 V (IEC 127)
<i>Classification</i>	
Safety class	1 with potential equalization connection
Protection	IP X 1
Type	BF
Approval	CE
<i>Dimension and Weight</i>	
Dimension (w/h/d)	400 x 160 x 360 mm
Weight	13.9 kg
Operating temperature	+10° C ~ +40° C
Operating humidity	30 % ~ 75 %
<i>Operating Conditions</i>	
Operating temperature	+10° C ~ +40° C
Operating humidity	30 % ~ 75 %
<i>Extent of Delivery</i>	
ML-L	<ul style="list-style-type: none"> ■ Power cable ■ User manual
<i>Interface to Camera</i>	
ML-L	Video-input: composit (BNC)

SPECIFICATION

<i>Main Lamp</i>	
Xenon short arc lamp	300 W
Colour temperature	6.000 K
Life cycle of the lamp	Average 500 h
Light output	Regulation
Counter for operating hours	Front display
Replacement indicator	Front display
<i>Emergency Lamp</i>	
Halogen	150 W
Colour temperature	Appr. 3.600° K
Life cycle of the lamp	50 h

<i>Order-No.</i>	<i>Accessories</i>
685-00200	Spare lamp 300 W Xenon
402-11410	High performance light guide, LG 310 W, length 2.3 m
402-11510	High performance light guide, LG 310 W, length 3.0 m
KE 363159	Potential equalization cable, 1 m