

# Electrosurgery



maXium®



*maxium®*

INGENUITY IS ALWAYS QUITE SIMPLE

**KLS martin**  
GROUP

## Reduction is perfection

*Nowadays, a trend towards “simplified dialog”, i.e. improved communication with the user, is clearly underway in all technical fields. While ever more complex background processes are going on inside the “box”, the foreground is increasingly shaped by demands for straightforward operation and easy control.*

# maxium®



Particularly in the OR, where every look and every hand counts, this development is more than just desirable. For it is not only in stressful situations that the surgeon and his team want to have at their finger tips just those functions and information that they really need for their current task.

The maxium® is KLS Martin's answer to this trend. It introduces a future-oriented generation of HF units that sets new standards in terms of ease of use and perfect control. And as can be expected from KLS Martin, the heart of the system consists of sophisticated technology capable of giving you an unsurpassed level of performance.



marTronic® series of electro-surgical units: maxium®

The new “high-end reference system” in the field of multifunctional HF surgery. The aims of its developers and designers were a direct translation of user demands. An innovative symbiosis of uncompromising technology and a whole range of user-friendly assets:

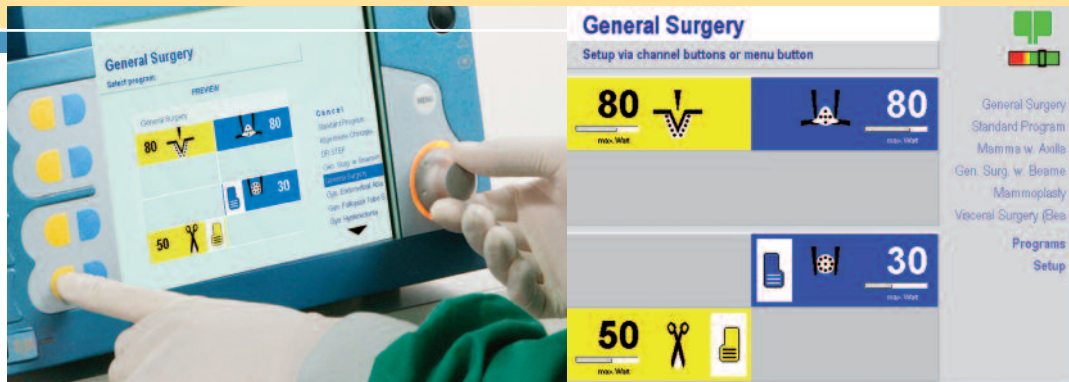
- ✗ ergonomics
- ✗ simplicity
- ✗ speed
- ✗ precision
- ✗ versatility
- ✗ safety

marTronic® – maxium®: a system that impresses with numerous advantages:

utmost ease of operation thanks to the optically-supported “Quick Step” control, perfect overview thanks to the new “maxi-display”, absolute flexibility thanks to personal programmability, and unsurpassed efficiency thanks to supreme functionality and ergonomics.

Control takes just a turn

maXium®

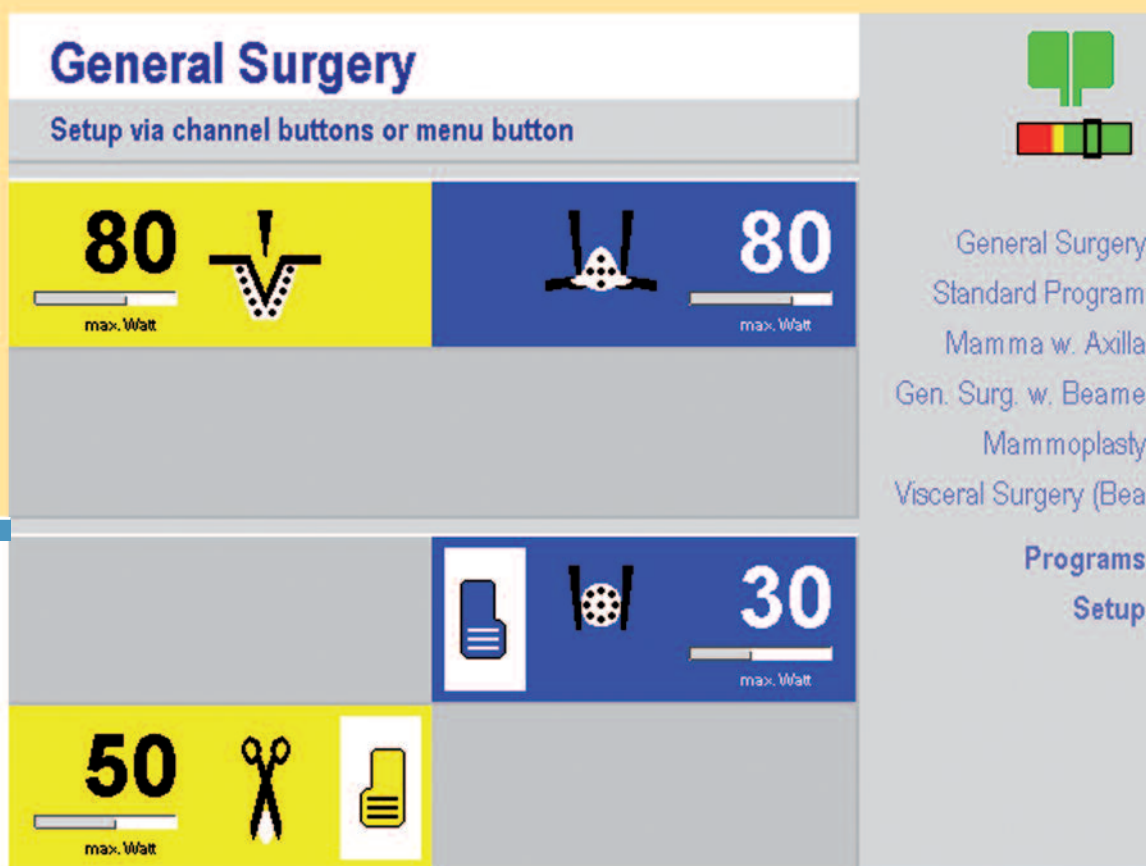


The “turn” of the maxium®:  
the optically-supported “Quick Step” control

The maxium®’s rotary switch allows you to operate the system fast, single-handedly and with utmost convenience. All HF parameters can be set and changed anytime with a quick movement of the hand. In each case, the current operating state is immediately recognizable by the backlight, a status-indicating system specially developed and patented by KLS Martin. The code is easy:

yellow = cutting, blue = coagulation, white = menu, off = inactive

The system’s memory offers you 99 storage positions for user-defined programs, plus a preset standard program. These can be stored under the respective medical specialization, the specific indication or your name – just as you prefer. The list of favorites enables you to access the “last used programs” (LUPs) with ease and call them up in a second when you need them.



The new “maxi-display” – the highly useful “eye-catcher” of the maxium®

It allows you to check at a glance which type of program you are currently using (monopolar, bipolar, cutting, coagulating), the set output power, the selected type of current, the chosen switching mode (hand switch or foot switch), the selected neutral (i.e. dispersive) electrode – all of this simultaneously and constantly for all four working channels.

Therefore, you always have the total picture.

In addition to the characteristics control guaranteeing an optimal and reproducible cut even in critical situations, the maxium® also offers so-called “arc-controlled” currents that ensure optimal power adjustment at any time.

As much as necessary, as little as possible – utmost safety for both the patient and the user.



## Concentration on what's essential

# maxium®



**"m" version**  
maxium® with socket module  
for KLS Martin accessories



**"i" version**  
maxium® with socket module  
for international accessories



**"e" version**  
maxium® with socket module  
for 5-mm accessories

### Modularity and individuality

The maxium® offers four working channels as standard features – two monopolar outputs and two bipolar ones. These are available in three different configurations (or socket modules): "m" version, "i" version, and "e" version.

Each of the four outputs can be selected individually, either via the channel selector button or with the rotary switch.

You have the choice – and the flexibility to meet your specific needs.



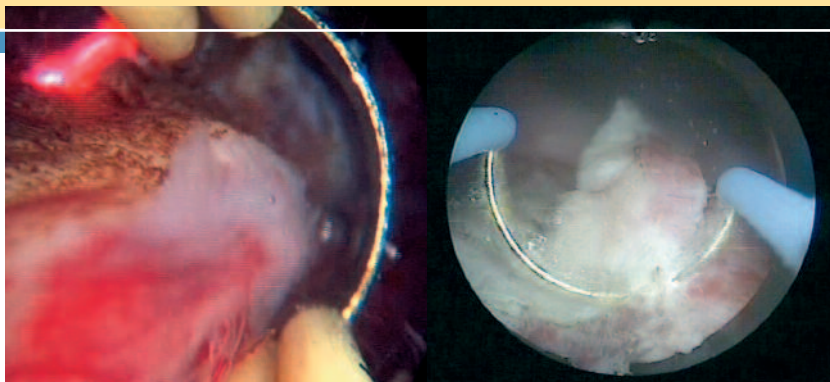
### The advantages at a glance

- ✗ Extremely easy to operate, thanks to the optically-supported “Quick Step” control
- ✗ Straightforward maxi-display
- ✗ User-oriented program philosophy, with 99 individual memory locations
- ✗ Two monopolar and two bipolar outputs
- ✗ More than 40 different types of current for all medical fields
- ✗ Monopolar, arc-controlled cutting with up to 360 watts
- ✗ Bipolar cutting with marCut® and Forfex
- ✗ Monopolar and bipolar coagulating with auto functions
- ✗ Fractionated currents for endoscopy
- ✗ SealSafe® bipolar vessel sealing system for open-surgical and endoscopic applications
- ✗ Argon plasma coagulation with maxium® Beamer
- ✗ Special range of “baby” NEs for use in pediatrics
- ✗ A single system configuration for all medical fields
- ✗ High cost-effectiveness
- ✗ Different socket modules (“m”, “i” or “e” version)
- ✗ Future-oriented system that can be both updated and upgraded
- ✗ Optional combination with the maxium® Cart
- ✗ CANopen interface for integration into intelligent OR systems
- ✗ “Night design” socket illumination

## Bipolar TUR in a new dimension

*The Bipolar TUR option gives you the opportunity to use the maxium® for bipolar cutting and coagulation in transurethral interventions as well. This operating mode requires the use of a bipolar resectoscope manufactured by Storz, Wolf and Olympus.*

maxium®

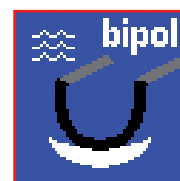


Examples Bipolar TUR

### Bipolar TUR

In contrast to classic, monopolar TUR procedures, where an electrically non-conductive irrigation liquid (sorbitol/mannitol sugar solution) is used, the bipolar TUR technique uses an electrically conductive saline solution (NaCl) for irrigation. Due to the resulting advantages – lower risk of a TUR syndrome and unlimited operating time – this method is mainly used in transcervical and transurethral surgery.

Thanks to two dedicated, specially optimized currents providing a booster pulse for starting the cutting process, it is possible to use TUR loop electrode sizes offering a high resection rate, which is particularly advantageous for TUR-P applications. Availability of a starting booster pulse means that the cutting process can be initiated without compressing the tissue with the wire loop – it is enough to just touch it slightly with the electrode wire. Trimming cuts are possible as well and can be performed with ease.







#### Main application areas

- ✗ Transurethral resection (TUR)
- ✗ Transcervical resection (TCR)

#### Advantages of Bipolar TUR

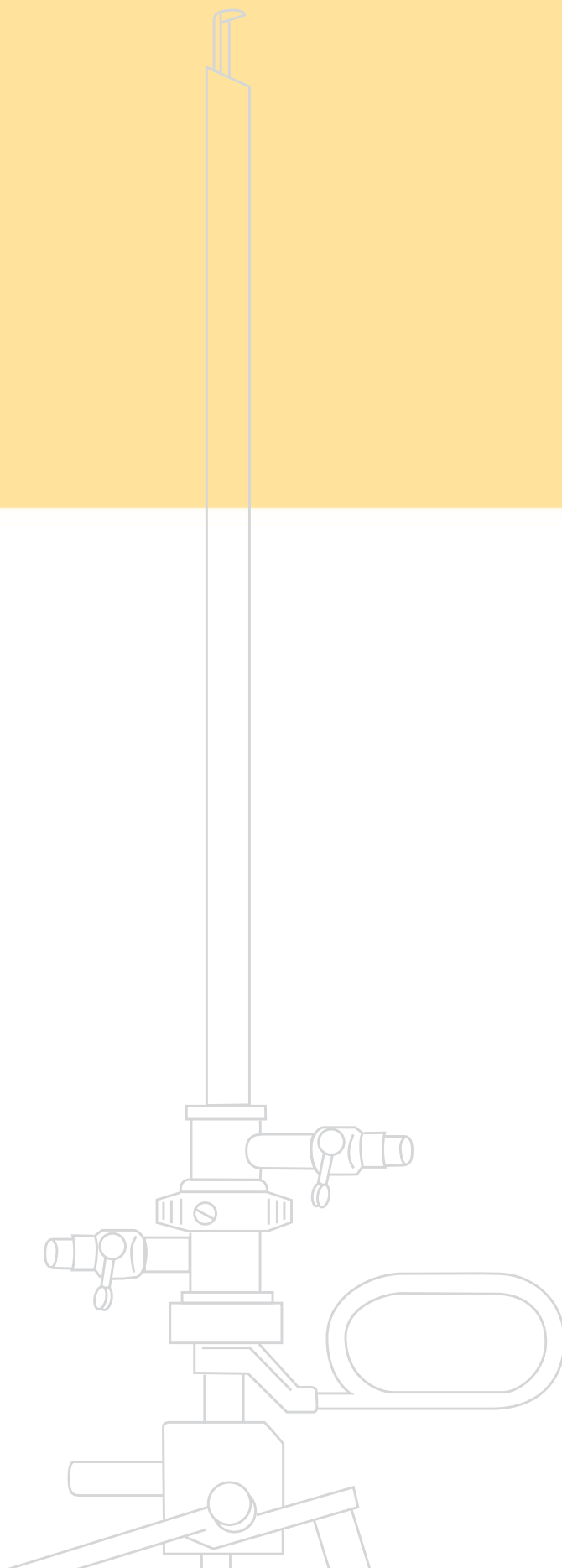
- ✗ Resection can be performed with saline solution
- ✗ No risk of causing a TUR syndrome
- ✗ No time limits for the intervention
- ✗ No neutral electrode required

#### Advantages of Bipolar TUR by KLS Martin

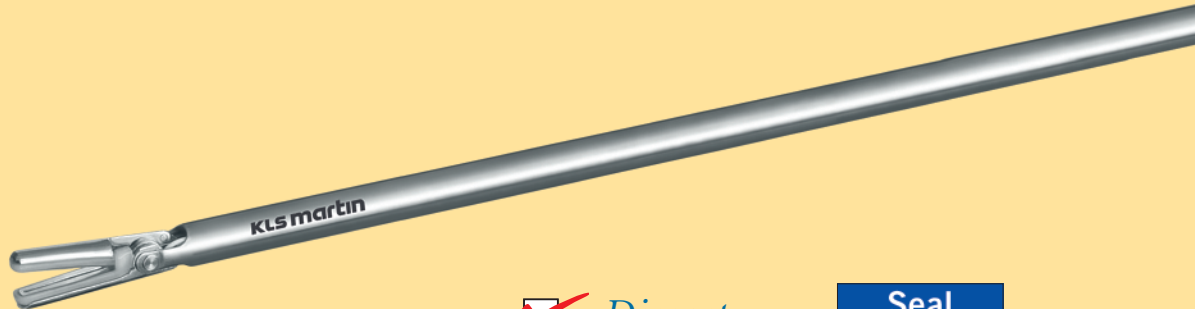
- ✗ Excellent cutting effect due to "Booster" impulse
- ✗ Larger loops possible for a faster resection
- ✗ Longer life time of the loop electrodes
- ✗ No particular warm up of saline solution necessary

#### Bipolar TUR and connection cables

Art. No.	Article
80-093-00-04	Option Bipolar TUR
80-287-91-04	for bipolar resectoscope Olympus, m-version
80-287-92-04	for bipolar resectoscope Storz, m-version
80-287-93-04	for bipolar resectoscope Wolf, m-version
80-287-94-04	for bipolar resectoscope Olympus, i/e-version
80-287-95-04	for bipolar resectoscope Wolf, i/e-version
80-287-96-04	for bipolar resectoscope Storz, i/e-version



## marSeal and maxium® – The system for bipolar vessel sealing



**marSeal**

- ✓ *Dissect*
- ✓ *Seal*
- ✓ *Cut*

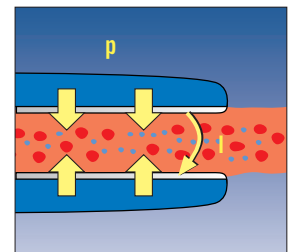


### marSeal

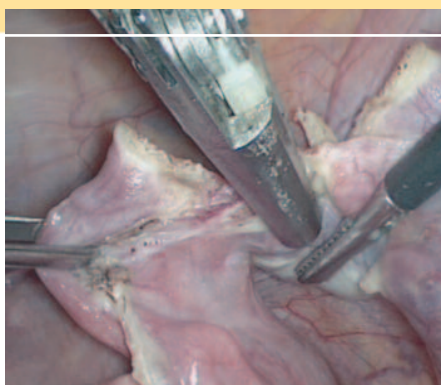
The marSeal instrument system, backed by the dedicated SealSafe® current, allows you to seal veins, arteries and tissue bundles effectively in open and laparoscopic surgery. Thanks to a cutting mechanism integrated into the marSeal instrument, the sealed tissue can be easily dissected in the middle – without any need to exchange instruments.

This modular system, which is available in two different lengths, offers users numerous advantages, among them effective sealing, significant cost reduction due to the minimized disposable portion, optimal and reproducible cutting results, full autoclavability and easy cleaning.

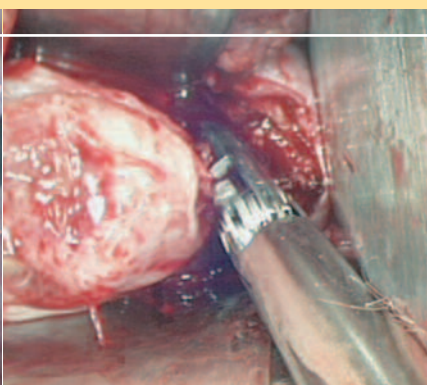
Please order our  
separate marSeal brochure  
(90-335-02-04)!



Pressure (p) plus electric current (I) achieves the sealing



Laparoscopic salpingectomy



Vaginal hysterectomy



Abdominal hysterectomy

### Examples from laparoscopic surgery:

- Adhesiolysis
- Appendectomy
- Colectomy
- Gastric bypass
- Nissen fundoplication
- Laparoscopically assisted vaginal hysterectomy
- Gastrectomy
- Salpingectomy

### Examples from open surgery:

- Adhesiolysis
- Abdominal hysterectomy
- Vaginal hysterectomy
- Colon resection
- Gastrectomy
- Gastric bypass
- Radical prostatectomy
- Cystectomy
- Salpingectomy



## A single unit for all applications

*The maxium® offers more than 40 precisely regulated currents, enabling you to create a whole range of customized programs in any medical field. With diverse currents the user can profit by the advantages of the intelligent spark control and thus draw on a maximum of security.*

# maxium®

ARGON  
Beam  
3.0  
L/min

Seal  
Safe



Monopolar and  
bipolar cutting

The maxium® is an electrosurgical unit that, due to its uniqueness, constitutes a class of its own at the "high end" of the spectrum. It offers you a multitude of different cutting currents that enable you to cope with any surgical demands encountered in advanced operating rooms. In addition to the "Pure Cut" and "Blend Cut" standard currents, special currents are available, e.g. for bipolar cutting or for endoscopic procedures.



Monopolar and  
bipolar coagulating

A comprehensive range of coagulation currents guarantees safe coagulating in open as well as endoscopic surgery. And if used in conjunction with the KLS Martin Argon Beamer, the system additionally offers you all the advantages of argon plasma surgery, both "open" and endoscopic.



### Spark control

The spark control feature of the maxium® provides continuous monitoring of the arc generated around the active electrode while keeping spark formation to the minimum required for effective cutting by automatically adjusting the output power in accordance with tissue impedances. This guarantees a uniform cutting result regardless of electrode geometry, cutting depth and cutting speed.



### marCut® bipolar scissors

KLS Martin's marCut® provides you with bipolar scissors that enable fast and safe tissue dissection while ensuring sufficient hemostasis at the same time, thanks to the Forfex current.

The bipolar marCut® scissors are available in two different versions:

- marCut® standard
- marCut® SL (slim line)

Please feel free to order our separate marCut® brochure (90-215-02-04)!



### marClamp® instrument for bipolar vessel sealing

The maxium® and marClamp® system is ideal for sealing vessels or tissue bundles permanently in open surgery – fast, securely and without any lateral thermal tissue damage. With the maxium®'s SealSafe® current, KLS Martin offers you perfect and reliable HF ligatures.

Laparoscopic vessel sealing is performed with the marLap Clamp and SealSafe® Cut instruments in conjunction with the special Endo SealSafe® current.

A separate marClamp® brochure is available free of charge under 90-237-02-04!





## The multifunctional HF system: maxium® + maxium® Beamer

*maxium®, maxium® Beamer and maxium® Cart constitute a system currently unrivaled in the field of argon plasma surgery, both “open” and endoscopic.*

maxium®

ARGON  
Beam  
3.0 l/min

ARGON  
6.0 l/min

ARGON  
Endo  
0.5 l/min

ARGON  
1.0 l/min

ARGON  
1.0 l/min

Argon plasma surgery ensures excellent coagulation results. As the high-frequency current ionizes the argon gas, the eschar produced is extremely uniform and just as elastic. This is also supported by the fact that the laser beam is automatically drawn to the bleeding, still uncoagulated tissue areas. One result is fast hemostasis – a capability of particular importance when dealing with diffuse hemorrhages. Further benefits include reduced blood loss and significantly shortened operating times. Effective endoscopic use is guaranteed as well, thanks to the availability of special, low-voltage currents that are ideal for application with gastrointestinal and tracheobronchial probes. This gives you safety and efficiency in one.

All maxium® Beamer applications are “non-contact”, which means significantly less tissue carbonization, better wound healing and a much lower perforation risk. We provide the technology to put you in control – with just the right type of current and the right argon gas flow in accordance with the indication and the instrument used.

The new maxium®, the maxium® Beamer and the maxium® Cart give you a unique multifunctional HF system that is a must for any state-of-the-art operating room.

maxium® Cart, the new equipment carrier that comes in the innovative maxium® design. It allows you to store the maxium® and maxium® Beamer safely and ergonomically in a compact arrangement. Needless to say, this new Cart can also accommodate any other marTronic® or ME unit belonging to KLS Martin's line of major electro-surgical systems.





## Technical Data maxium®

### Mains connection

Power requirements	100–240 V ±10%
Mains current	max. 6.3 A
Mains fuse	6.3 A
Nominal frequencies	300/400/600 kHz
Power input in standby mode	40 watts
Max. power input	600 watts

### Output power

Cutting power	max. 360 watts
Coagulation power	max. 320 watts

### Safety system

Safety system	PCS and NE indicator (LED)
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### Weight and dimensions

Weight	8.3 kg
Width x height x depth	390 x 182 x 435 mm

### Standards

Classification acc. to MDD	II b
Protection class acc. to DIN EN 60-601-1	I
Type of applied part	CF; defibrillation-proof
Approval/mark of conformity	CE 0297, in compliance with 93/42/EEC

## Technical Data maxium® Beamer

Power supply	via maxium® unit
Device fuse	M 1.6 A
Power input	max. 40 watts
Protection class	I
Classification acc. to MDD	II b
Argon gas flow, CUT	0.1 to 12 l/min ± 20%; 0.0 l/min = off
Argon gas flow, COAG	0.1 to 12 l/min ± 20%; 0.0 l/min = off
LF leakage currents	complying to IEC 601, Part 1 (testing in connection with maxium® HF generator)
Type of applied part	CF; defibrillation-proof
Duty type	INT 10 s/30 s (= duty factor of 25%)
Weight	3.5 kg
Dimensions	Width 390 mm Height (w/o ball-head bolts) 108 mm Depth 425 mm
Approval/mark of conformity	CE 0297, in compliance with 93/42/EEC

## Order numbers

80-042-00-04	maxium® with socket module for KLS Martin accessories, "m" version
80-042-02-04	maxium® with socket module for international accessories, "i" version
80-042-04-04	maxium® with socket module for 5-mm accessories, "e" version
80-044-00-04	maxium® Beamer
80-046-00-04	maxium® Cart equipment carrier

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