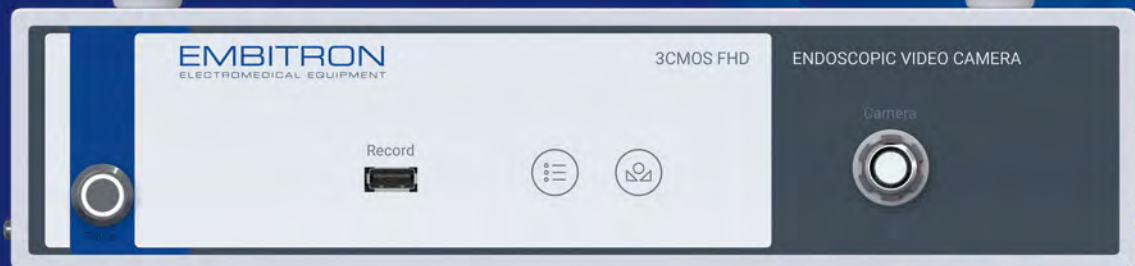
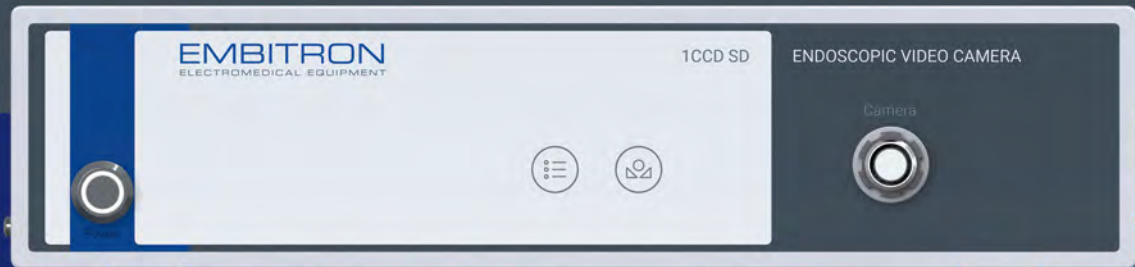


EMBITRON

ELECTROMEDICAL EQUIPMENT



ENDOSCOPIC EQUIPMENT

OUR COMPANY

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EMBITRON
ELECTROMEDICAL EQUIPMENT



ABOUT **EMBITRON**

In the more than twenty years since its establishment, EMBITRON® Ltd. has become one of the major and suppliers of unique devices for the treatment of the musculoskeletal system, blood circulation disorders, stagnant metabolism and trophic changes in limbs, thereby contributing to significantly improving the quality of life for patients suffering from large varieties of diseases.

Since 2018 EMBITRON company started producing units and complete sets of equipment for minimally invasive surgery. Advanced technical

solutions and design, high reliability, excellent price/quality/performance ratio, high service level enable EMBITRON equipment to be the best choice for surgeons.

EMBITRON distributes its devices worldwide. Our services also include both equipment installation and training of medical staff for operation of the devices.

As of June 2016, EMBITRON Ltd. has been a part of the CertiCon Group.

ABOUT **CERTICON**

CERTICON, the leading company of the CertiCon Group, with over 350 employees, is an important Czech IT company that has been successfully operating in the

global market since 1996. In 2016, it was named one of the Top 10 European Most Innovative Companies.

CERTICON focuses on comprehensive services in software development and design of electronic circuits for critical applications in ICT, health care, automotive technology, and systems for Industry 4.0.

Over 80% of all services provided by CERTICON are regularly exported to the nations of the EU and to the USA.

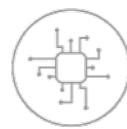
ENDOSCOPIC VIDEO CAMERAS



Big TFT display



Comfy menu



Modern tech.



Easy to clean



MBT-1001.5



ENDOSCOPIC VIDEO SYSTEM: 1CMOS FHD VIDEO CAMERA + LED LIGHT SOURCE + DVR

CAMERA:

- 1x1/3" 16:9 CMOS ultra high sensitive image sensor
- full HD resolution: 1920 x 1080p
- 4 programmable control buttons on camera head
- 8 Endoscope scenes for using different type of endoscopes
- up to 10x digital Zoom, Mirror and Freeze functions
- built-in recording module for saving HD movies/stills on USB media (memory stick, HDD)

LIGHT SOURCE:

- high intensity LED light output (equivalent to 300W Xenon) at low power consumption
- extremely long LED service life - more than 50 000 hrs.
- full touch screen control for both camera and LED light source

MBT-1001.2



ENDOSCOPIC VIDEO CAMERA 1CCD SD

- 1x1/3" 4:3 CCD ultra high sensitive image sensor
- 5 types of endoscopy settings
- up to 2,5x digital Zoom and Freeze functions
- Mirror, Rotation and Flip functions
- digital anti-Moire function for flexible endoscopes
- 3 programmable control buttons on the camera head
- input of patient information via external keyboard
- DVI-D output

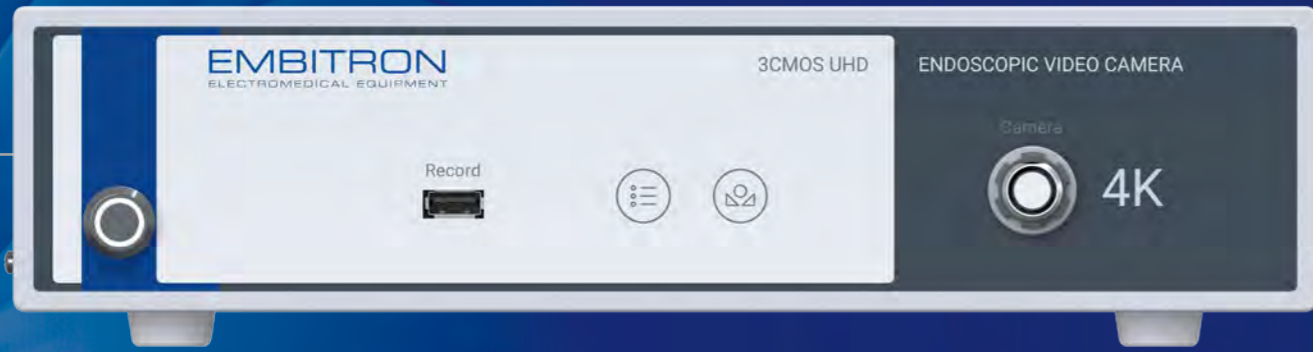


MBT-1001.2 camera head

SPECIFICATIONS

	MBT-1001.5	MBT-1001.2
TV-standard	Full HD 1920(H) x 1080(V) pix. progressive scan	PAL (752(H) x 582(V) pix.) or NTSC (768(H) x 494(V) pix.)
Image sensor	1 x 1/3" CMOS	1 x 1/3" CCD
Resolution, TV lines	>1100	500
Signal to noise ratio, dB	54	54
Minimal illumination, lx	0,1	0,1
Video outputs	2xHDMI, 1xEthernet, 1xHD SDI*, 1xRGB(SXVGA), 1xDVI-D	2xCVBS, 2xS-Video, DVI-D
Electronic Zoom	1x ... 10x	1x ... 2,5x
Standard	Protection class I; Applied part: BF; classification acc. to MDD 93/42/EEC: I	
Shutter speed, 1/s	1/50...1/50 000	1/50...1/50 000
Mains voltage, V	230	230
Dimensions, mm/Weight, kg	350x150x350 / 7,5	320x85x230 / 3,0

MBT-1001.4



3CMOS ULTRA HD (4K) ENDOSCOPIC VIDEO CAMERA

- 3 x 1/3" 16:9 image sensors
- high sensitivity requires less light from illumination
- ultra high definition resolution 3840x2160 p at 50Hz or 60Hz
- high interference immunity from electrosurgery
- light enhancement increases the visibility of shadowed objects
- smoke reduction function
- up to 1600 TV lines horizontal resolution
- quad 3G-SDI and HDMI 2.0 outputs, simultaneous 4K and HD outputs
- on-device HD video recording and image capturing

SPECIFICATIONS

Image resolution	UHD 3840(H) x 2160(V) pix. progressive scan
Image sensor	3 x 1/3" CMOS
Resolution, TV lines	>1600
Signal to noise ratio, dB	>56
Minimal illumination, lx	<2,0
Video outputs	1xS-Video, 4xSDI (UHD), 1xSDI, 1xHDMI (UHD), 1xHDMI (FHD)
Electronic Zoom	1x ... 2,5x
Shutter speed, 1/s	1/50 ... 1/50 000
Mains voltage, V	230
Dimensions, mm/Weight, kg	320x85x328 / 5,2

Camera Control Unit Connectivity



MBT-1001.1



ENDOSCOPIC VIDEO CAMERA 1CMOS FHD

- 1x1/3" 16:9 CMOS image sensor
- full HD resolution: 1920 x 1080p
- 3 programmable control buttons on camera head
- 5 Endoscope settings for using different type of endoscopes
- standard definition video output for backward compatibility
- up to 2,5x digital Zoom function
- Freeze, Mirror and Flip functions

MBT-1001.1 camera head



MBT-1001.3



ENDOSCOPIC VIDEO CAMERA 3CMOS FHD

- 3x1/3" 16:9 CMOS image sensors
- full HD resolution: 1920 x 1080 pix. with progressive scan
- new image enhancement functions on clarity and color
- 5 Endoscope settings for using different type of endoscopes
- up to 2,5x digital Zoom function and Freeze function
- Mirror, Flip and Rotation functions
- built-in recording module for saving HD movies/stills on USB media (memory stick, HDD) (option)

MBT-1001.3 camera head



SPECIFICATIONS	MBT-1001.1	ECONT 1001.3
Image resolution	Full HD 1920(H) x 1080(V) pix. progressive scan	Full HD 1920(H) x 1080(V) pix. progressive scan
Image sensor	1 x 1/3" CMOS	3 x 1/3" CMOS
Resolution, TV lines	>900	>1000
Signal to noise ratio, dB	54	56
Minimal illumination, lx	<3,0	2,0
Video outputs	2xCVBS*, 2xS-Video*, 1xRGB(SXVGA)*, 2xDVI-D	2xCVBS*, 2xS-Video*, 2x3G-SDI*, 1xRGB(SXVGA)*, 2xDVI-D
Electronic Zoom	1x ... 2,5x	1x ... 2,5x
Standard	Protection class I; Applied part: BF; classification acc. to MDD 93/42/EEC: I	
Shutter speed, 1/s	1/50 ... 1/50 000	1/50 ... 1/50 000
Mains voltage, V	230	230
Dimensions, mm/Weight, kg	320x85x328 / 4,5	320x85x328 / 4,5

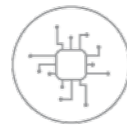
ENDOSCOPIC LIGHT SOURCES



Big TFT display



Comfy menu



Modern tech.



Easy to clean



MBT-1002.2



ENDOSCOPIC LIGHT SOURCE (LED, TS)

- latest LED technology
- extremely long LED service life – more than 50 000 hrs.
- high intensity light output (equivalent to 300W Xenon)
- low noise, low heat conduction
- electronical light control via touch screen
- menu language selection
- pure daylight quality
- waterproof touch control panel
- non-volatile memory user settings
- display the current settings on the color 7" TFT monitor

MBT-1002.1



ENDOSCOPIC LIGHT SOURCE (LED)

- latest LED technology
- high intensity light output (equivalent to 300W Xenon) at low power consumption
- extremely long LED service life – more than 50 000 hrs.
- low noise, low heat conduction
- electronical light control via buttons
- pure daylight quality
- waterproof control panel

SPECIFICATIONS

	MBT-1002.2	MBT-1002.1
Light source lifetime, hrs	50 000	500
Light source power (LED or Xenon), W	90	90
Light colour temperature, K	5600	5600
Adjustment of light intensity, %	0 ... 100	10 ... 100
Intensity adjustment	Electronically	Electronically
Controls	Touch Screen	Pushbuttons
Protection class	I	I
Applied part	BF	BF
Standard	EN 60601-1; classification acc. to MDD 93/42/EEC: I	
Dimensions, mm	350x150x350	350x150x350
Weight, kg	6,4	7,1
Mains voltage, V	230	230

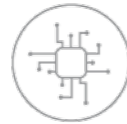
CO₂ INSUFFLATORS



Big TFT display



Comfy menu



Modern tech.



Easy to clean



MBT-1005.1

**CO₂ INSUFFLATOR**

- very smooth insufflation algorithm allowing to avoid sharp abdominal pressure changes
- audible and visual alarm signalling system in case of a failure (hose rupture/pinching, intra-abdominal overpressure etc.)
- display of all current and preset insufflation parameters: set/current pressure, gas flow speed, volume of gas supplied
- device can be used with gas bottles or central gas supply systems - input pressure range 4...100 bars
- insufflator is available with a high efficient gas heating subsystem (option)
- automatic self check is activated each time the unit is switched on to ensure that all electronic and pneumatic components are in good running order

MBT-1005.2

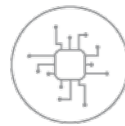
**CO₂ INSUFFLATOR**

- MBT-1005.2 is a high-performance insufflator with friendly user interface.
- stable pressure balance in the abdomen is guaranteed by high gas flow performance (40 liters per minute) and low insufflation pressure
 - patient safety is ensured by the system of protective valves, by microprocessor control with audible and visual signaling
 - device can be used with gas bottles or central gas supply systems - input pressure range 4...100 bars
 - big TFT display gives a quick overview of the rated and actual values of gas pressure and gas flow
 - setting of the working parameters is made by touching controls on touch-screen multilanguage menu
 - for eliminating of post surgery problems the insufflator is equipped with a high efficient gas heating subsystem

SPECIFICATIONS

	MBT-1005.1	MBT-1005.2
Insufflation pressure, mm Hg	1 ... 30	1 ... 30
Maximum gas flow rate, l/min	30	40
Range of the gas temperature maintenance, °C	33...36 (option)	33...36
Gas cylinder pressure indicator	Yes	Yes
Safety exsufflation valve	Yes	Yes
Display	LED	7" TFT Touch Screen
Protection class	I	I
Applied part	BF	BF
Standard	EN 60601-1; classification acc. to MDD 93/42/EEC: IIa	
Mains voltage, V	230	230
Dimensions, mm	350x140x350	350x140x350
Weight, kg	7,8	8,3

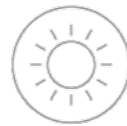
CO₂ INSUFFLATORS



High performance



Smart Continuous Flow Algorithm



Gas heating system



High level of patient safety



Smoke evacuation



MBT-1005.3 CONTINUOUS FLOW CO₂ INSUFFLATOR

The insufflator maintains pneumoperitoneum under extreme conditions for reliability during all laparoscopic procedures. It offers real time pressure sensing for increased accuracy during a procedure.

Active exsufflation in case of continuing excess pressure in the connected body cavity is taken for higher patient safety.

MBT-1005.3



Safety

- automatic computer-supported check on device soft- and hardware when turning the unit on
- internal gas exsufflation valve is activated for automatical reduction of dangerous intraabdominal overpressure

Ergonomic design

- big 7" TFT display gives a quick overview of the rated and actual values of gas pressure, gas flow, alarms etc.
- setting of the working parameters is made by touching controls on touch-screen multilanguage menu

Performance

- high flow rate capacity of 45 l/min quickly compensates for even big gas losses
- insufflator's Smart Continuous Flow algorithm ensures insufflation depending on the filling

level of the body cavity, thus an optimized filling speed is achieved with fully automatic, situation-related insufflation pressure values. A continuous gas flow provides a filling procedure with small pressure fluctuations in the body cavity and a high average insufflation performance

Gas heating

- for eliminating of post surgery problems the insufflator is equipped with a high efficient gas heating subsystem

Smoke evacuation

- evacuation of smoke and mist generated during electrosurgery and ultrasonic procedures can be made by pressing the footswitch

Gas supply

- device can be used with gas bottles or central gas supply systems - input pressure range 4...100 bars

SPECIFICATIONS

MBT-1005.3

Insufflation pressure, mm Hg	1 ... 30
Maximum gas flow rate, l/min	45
Range of the gas temperature maintenance, °C	33...36
Gas cylinder pressure indicator	Yes
Active exsufflation, Smoke evacuation	Yes / Yes
Display	7" TFT Touch Screen
Protection class	I
Applied part	BF
Standard	EN 60601-1; classification acc. to MDD 93/42/EEC: IIa
Mains voltage, V	230
Dimensions, mm	350x140x350
Weight, kg	7,8

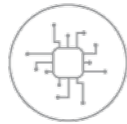
ELECTROSURGICAL GENERATORS



Big TFT display



Comfy menu



High performance



Easy to clean



MBT-1003.1


ELECTROSURGICAL GENERATOR (300W)

- adaptive system with output power stabilization in wide range of tissue resistances (100-1000 Ohms)
- neutral electrode continuity and LF current leakage monitoring that ensure safety
- self-test of the generator and accessories after switching the power on
- monopolar modes activation: by footswitch or handle
- monopolar cutting in liquid (TUR mode)
- up to 9 frequently used by surgeon modes can be saved in memory
- flat front panel, easy to clean, with pushbuttons for modes and power regulation

MBT-1003.2


ELECTROSURGICAL GENERATOR (300W, TS)

- adaptive system with output power stabilization in wide range of tissue resistances (100-1000 Ohms)
- neutral electrode continuity and LF current leakage monitoring that ensure safety
- self-test of the generator and accessories after switching the power on
- monopolar modes activation: by footswitch or handle
- monopolar cutting in liquid (TUR mode)
- up to 9 frequently used by surgeon modes can be saved in memory
- flat front panel, easy to clean, with touch screen menu for modes and power regulation
- colour 7" TFT monitor displays effective output power levels in all operating modes

SPECIFICATIONS
MBT-1003.1
MBT-1003.2
Monopolar cutting

Pure cutting	300W at 300 Ohm	300W at 300 Ohm
TUR cutting	300W at 300 Ohm	300W at 300 Ohm
Blend1	180W at 300 Ohm	180W at 300 Ohm
Blend2	210W at 300 Ohm	210W at 300 Ohm

Monopolar coagulation

SoftCoag	100W at 300 Ohm	100W at 300 Ohm
ForcedCoag	120W at 300 Ohm	120W at 300 Ohm

Bipolar coagulation

Bicoag1	90W at 200 Ohm	90W at 200 Ohm
Bicoag2	90W at 200 Ohm	90W at 200 Ohm
Generator operation frequency	440 kHz	440 kHz
Display / Controls	LED / pushbuttons	7" TFT / touch screen
Protection class	I	I
Applied part	BF	BF
Classification acc. to MDD 93/42 ECC	IIb	IIb
Low-frequency leakage currents	acc. to IEC 60601-1	acc. to IEC 60601-1
High-frequency leakage currents	acc. to IEC 60601-2-2	acc. to IEC 60601-2-2
Mains voltage, V	230	230
Power consumption, W, max.	650	650
Dimensions, mm	320x140x350	350x140x350
Weight, kg	7,3	7,3

ELECTROSURGICAL SYSTEM



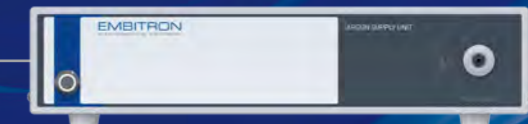
MBT-1003.3



ELECTROSURGICAL GENERATOR

- two monopolar and one bipolar outputs
- adaptive algorithm with output power maintaining for wide range of tissue resistances (100-1000 Ohms)
- neutral electrode continuity and LF/HF current leakage monitoring
- self-test of the generator and accessories after switching the power on
- monopolar modes activation: by footswitch or handle

MBT-1003.3A

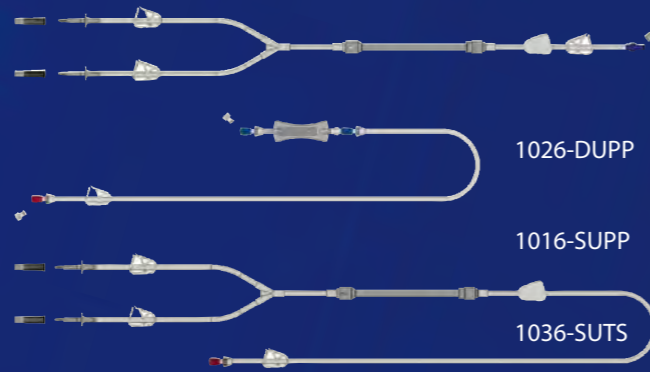


ARGON SUPPLY UNIT

- fully automatic vessel sealing system
- special mono- and bipolar modes for arthroscopy, urology and gynaecology
- Autostart/Autostop for mono- and bipolar modes
- up to 100 personal user presets (programs)
- flat front panel, easy to clean, with pushbuttons for modes and power regulation
- colour TFT monitor displays effective output power levels in all operating modes

SPECIFICATION	VALUE	SPECIFICATION	VALUE
Monopolar Modes			
Monopolar cutting		Monopolar coagulation	
Forced cut (Hemostasis 0...7)	400W at 500 Ohm	Soft coag	120W at 100 Ohm
Standard cut 1 (Hemostasis 0...7)	100W at 300 Ohm	Forced coag 1	150W at 400 Ohm
Standard cut 2 (Hemostasis 0...7)	200W at 400 Ohm	Forced coag 2	150W at 500 Ohm
Standard cut 3 (Hemostasis 0...7)	300W at 400 Ohm	Forced coag 3	150W at 500 Ohm
Standard cut 4 (Hemostasis 0...7)	300W at 500 Ohm	Uro coag	50W at 300 Ohm
Uro cut	300W at 300 Ohm	Arthro coag	50W at 300 Ohm
Pure cut	75W at 200 Ohm	Spray coag	120W at 2000 Ohm
Precise cut	50W at 200 Ohm	Argon coag*	120W at 2000 Ohm
Pulsed cut	300W at 300 Ohm	Argon endo coag*	120W at 2000 Ohm
Pulsed cut (Hemostasis 0...7)	120W at 500 Ohm	* with Argon supply unit installed	
Bipolar modes		Bipolar coagulation	
Bipolar cutting		Bipolar coagulation	
Bipolar cut (Hemostasis 0...7)	100W at 100 Ohm	Micro bi-coag	60W at 100 Ohm
Uro bi-cut	300W at 100 Ohm	Standard bi-coag	100W at 100 Ohm
Arthro bi-cut 1	300W at 100 Ohm	Forced bi-coag	150W at 100 Ohm
Arthro bi-cut 2	300W at 100 Ohm	Auto bi-coag	300W at 20 Ohm
Arthro bi-cut 3	300W at 100 Ohm	Uro bi-coag	120W at 100 Ohm
		Arthro bi-coag	120W at 100 Ohm
Vessel sealing			
Vessel sealing (Lap 5mm)	100W at 20 Ohm		
Vessel sealing (Lap 10mm)	300W at 20 Ohm		
Vessel sealing (Gen. surgery)	300W at 20 Ohm		
General Specifications			
Generator operation frequency	440 kHz	Low-frequency leakage currents	acc. to IEC 60601-1
Display / Controls	TFT / pushbuttons	High-frequency leakage currents	acc. to IEC 60601-2-2
Protection class	I	Mains voltage, V	230
Applied part	CF	Power consumption, VA, max.	690
Classification acc. to MDD 93/42 ECC	IIb	Dimensions, mm / Weight, kg	350x140x350 / 8,0

MBT-1006.1



UNIVERSAL FLUID PUMP

- device can be used in 4 modes: Laparoscopy, Arthroscopy, Urology and Hysteroscopy
- FLUSH function enables efficiency increase of fluid flow up to 2 l/min
- LEVEL function gives a possibility to calibrate the measuring system by the user relative to the operation area for real pressure measurement in the operating area. The regulation range is between -100 cm and +100 cm.
- two pressure sensors to ensure safety in case of failure of one of them
- big 7" TFT display gives a quick overview of the rated and actual values of working modes, parameters, alarms etc.
- setting of the working parameters is made by touching controls on touch-screen multilanguage menu
- embedded software that checks all critical parameters of the device
- non-volatile memory of the latest settings
- overpressure protection.

SPECIFICATIONS

MBT-1006.1

	Arthroscopy	Urology	Hysteroscopy	Laparoscopy
Pressure range, mmHg	10 – 150	10 – 150	10 – 200	Fixed
Flow range, l/min	0,1 – 2,0	0,1 – 1,0	0,05– 0,5	1,0 – 2,0
Suction performance, l/min	max. 2,0	max. 2,0	max. 2,0	max. 2,0
Deficit monitoring	No	Yes	Yes	No
CE standard	Comply with MDD 93/42/EEC			
Casing safety standard	IP X1	IP X1	IP X1	IP X1
Device classification	Ila, BF	Ila, BF	Ila, BF	Ila, BF
Dimensions, mm	306 x330 x120	306 x330 x120	306 x330 x120	306 x330 x120
Weight, kg	6,0	6,0	6,0	6,0
Mains voltage, V AC	230	230	230	230

MBT-1004.1



SUCTION-IRRIGATION UNIT

- based on a high performance pump
- minimal level of acoustic noise
- aspirates out not only liquid components but small blood conglomerations as well
- controlled by footswitch
- special spike enables quick irrigation bottle replacement

MBT-1004.2



SUCTION-IRRIGATION UNIT (AUTOMATIC)

- based on a high performance pump
- minimal level of acoustic noise
- aspirates out not only liquid components but small blood conglomerations as well
- special spike enables quick irrigation bottle replacement
- suction or irrigation modes are activated by an instrument (Auto mode) or footswitch (Footswitch mode);
- automatic standby function keeps the pressure available and reduces the noise if the system is in use

SPECIFICATIONS

MBT-1004.1

MBT-1004.2

Max vacuum in aspiration channel, mm Hg	700	700
Max overpressure in irrigation channel, mm Hg	300	300
Maximal liquid outgo, l/min	5	5
Controls	footswitch	footswitch, automatic
Protection class	I	I
Applied part	BF	BF
Standard	EN 60601-1; classification acc. to MDD 93/42/EEC: Ila	
Mains voltage, V	230	230
Power consumption, W, max.	70	70
Dimensions, mm	325x85x350	325x85x350
Weight, kg	5,3	5,6

MBT-1007.1 MEDICAL CART

MBT-1007.1 medical cart is intended for placing endosurgical (endoscopic) equipment on its 4 adjustable shelves.

- all wiring can be made hidden in side racks
- 8 socket-outlets with interferences filtering
- articulating supporting arm for TFT monitor (option)
- holder for flexible endoscopes (option)
- compartment with lock for accessories
- mountable enclosure with door at back side of cart (option)
- easy and soft rolling motion
- locking brakes on forewheels for safety use
- attractive appearance

**TELESCOPES FOR ENDOSURGERY**

FEATURES:

- high-quality telescopes for laparoscopy, gynecology, urology, arthroscopy, sinuscopy...
- minimal distortions
- enhanced (HD) resolution
- perfect image color rendition
- fully autoclavable with 134°C/273°F

For more details refer to separate catalogue

**FIBEROPTIC LIGHT GUIDES**

FEATURES:

- high light transmission
- increased flexibility and durability
- complete range of adapters
- fully autoclavable with 134°C/273°F

For more details refer to separate catalogue

**INSTRUMENTS FOR ENDOSURGERY**

FEATURES:

- reusable instruments for laparoscopy, gynecology, urology, arthroscopy, sinuscopy...
- made of latest materials with using up-to-date technologies
- fully autoclavable with 134°C/273°F

For more details refer to separate catalogues



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