

9 TECHNICAL DATA - ERBOTOM ICC 350

9.1 Technical data

Cutting, monopolar with automatic voltage control (AUTO CUT)	
HF voltage waveform	unmodulated sinusoidal alternating voltage
Crest factor C, at $R_L = 500$ ohms	$C = 1.4$ for all settings
Rated frequency	330 kHz
Maximum HF voltage at load resistance $R_L = \infty$	$650 V_P$
Dynamic internal impedance in rated load range	0 ohm
Constancy of the HF voltage at $R_L > 350$ ohms	automatically controlled
Cutting quality	4 coagulation effects selectable by key
Constancy of the 4 coagulation effects	automatically controlled
HF rated power	300 watts at $R_L = 500$ ohms
HF power limitation	1 to 300 watts in 1 watt steps
Setting of the HF power limitation	via up/down keys
Display of the HF power limitation	7-segment display, 3 decimal places
Precision of the HF power limitation	+/- 1 digit or +/- 10%
Activation of the Cutting mode	by key or pedal
HF connecting sockets	2, electronically locked from one another

Cutting, monopolar with automatic arc control (HIGH CUT)	
HF voltage waveform	unmodulated sinusoidal alternating voltage
Crest factor C, at $R_L = 500$ ohms	$C = 1.4$ for all settings
Rated frequency of the HF voltage	330 kHz
Maximum HF voltage at load resistance $R_L = \infty$	$570 V_P$
Constancy of the intensity of the electric arc	automatically controlled
Cutting quality	4 coagulation effects selectable by key
Constancy of the 4 coagulation effects	automatically controlled
HF rated power	300 watts at $R_L = 500$ ohms
HF power limitation	1 to 300 watts in 1 watt steps
Setting of the HF power limitation	via up/down keys
Display of the HF power limitation	7-segment display, 3 decimal places
Precision of the HF power limitation	+/- 1 digit or +/- 15%
PPS (Power Peak System)	yes
Activation of the Cutting mode	by key or pedal
HF connecting sockets	2, electronically locked from one another

Cutting, monopolar with automatic voltage control (Program "b")	
HF voltage waveform	unmodulated sinusoidal alternating voltage
Crest factor C, at $R_L = 500$ ohms	$C = 1.4$ for all settings
Rated frequency	330 kHz
Maximum HF voltage at load resistance $R_L = \infty$	$550 V_P$
Dynamic internal impedance in rated load range	0 ohm
Constancy of the HF voltage at $R_L > 350$ ohms	automatically controlled
Cutting quality	4 coagulation effects selectable by key
Constancy of the 4 coagulation effects	automatically controlled
HF rated power	120 watts at $R_L = 125$ ohms
HF power limitation	1 to 100 watts in 1 watt steps
Setting of the HF power limitation	via up/down keys
Display of the HF power limitation	7-segment display, 3 decimal places
Precision of the HF power limitation	+/- 1 digit or +/- 15%
PPS (Power Peak System)	yes
Activation of the bipolar cutting mode	pedal
HF outlet socket	bipolar

CUTTING / ENDO CUT	
Automatic arc-triggered, fractionated incision	
Basic setting	$t_{on} = 50 \text{ ms}$, $t_{off} = 750 \text{ ms}$

Soft coagulation (SOFT COAG)	
HF voltage waveform	unmodulated sinusoidal alternating voltage
Crest factor C, at $R_L = 500 \text{ ohms}$	$C = 1.4$ for all settings
Rated frequency of the HF voltage	330 kHz
Peak value of the HF voltage	max. 1900 V_p
Constancy of the HF voltage	automatically controlled
HF rated power	120 watts at 125 ohms
HF power limitation ($P_{HFmax.}$)	from 1 watt to 120 watts in 1 watt steps
Setting of the HF power limitation	via up/down keys
Display of the HF power limitation	7-segment display, 3 decimal places
Precision of the HF power limitation	+/- 1 digit or +/- 15%
Activation of the Cutting mode	by key or pedal
HF connecting sockets	2, electronically locked from one another

Forced coagulation (FORCED COAG)	
HF voltage waveform	pulse-modulated alternating voltage
Crest factor C, at $R_L=500 \text{ ohms}$	$C = 5$ at 120 W_{max} , $C = 11$ at 5 W_{max}
Rated of the HF voltage	1 MHz
Peak value of the HF voltage Version 1	max. 1,300 V_p
Peak value of the HF voltage Version 2	max. 2,300 V_p
Peak value of the HF voltage Version 3	max. 2,300 V_p
Peak value of the HF voltage Version 4*	max. 2,600 V_p
HF rated power	120 watts at $R_L=350 \text{ ohms}$
HF power limitation	from 1 watt to 120 watts in 1 watt steps
Setting of the HF power limitation	via up/down keys
Stability of the HF power	see Diagram Forc. Coag. power via RL
Display of the HF power limitaiton	7-segment display, 3 decimal places
Precision of the HF power limitation	+/- 1 digit or +/- 15%
Activation of the Forced coagulation	by key or pedal
HF connecting sockets	2, electronically locked from one another

Spray coagulation (SPRAY COAG)	
HF voltage waveform	pulse-modulated alternating voltage
Crest factor C, at $R_L=500 \text{ ohms}$	$C = 7$ at 120 W_{max} , $C=15$ at 5 W_{max}
Rated frequency of the HF voltage	1 MHz
Peak value of the HF voltage	max. 4 kV_p
HF rated power	120 watts at 500 ohms
HF power limitation	from 1 watt to 120 watts in 1 watt steps
Setting of the HF power limitation	via up/down keys
Display of the HF power limitation	7-segment display, 3 decimal places
Precision of the power limitation	+/- 1 digit or +/- 15%
Activation of the Spray coagulation	by key or pedal
HF connecting sockets	2, electronically locked from one another

*) not ICC 350 T, Z

Bipolar coagulation (AUTO BIPOLAR)	
HF voltage waveform	unmodulated sinusoidal alternating voltage
Crest factor C, at RL=500 ohms	C = 1.4 for all settings
Rated frequency	330 kHz
Peak value of the HF voltage	190 V _{P max}
Constancy of the HF voltage at RL > 50 ohms	automatically controlled
HF rated power	120 watts at 125 ohms
HF power limitation (P _{HFmax})	from 1 watt to 120 watts in 1 watt steps
Setting of the HF power limitation	via up/down keys in 1 watt steps
Display of the HF power limitation	7-segment display, 3 decimal places
Precision of the HF power limitation	+/- 1 digit or +/-15%
Activation of the Bipolar coagulation	by pedal or Auto Start
Auto Start delay	0 = 0 sec., 1 = 0.5 sec., 2 = 1 sec. selectable
Auto Stop ON/OFF	by key
HF connecting socket	1

Safety features	
Protection class according to EN 60 601-1	I
Type according to EN 60 601-1	CF
Switching of the neutral electrode	can be changed over: capacitive grounding or floating output
Monitoring of single-surface neutral electrodes	Automatic monitoring of the electrical connection between the neutral electrode and high-frequency surgical unit
Monitoring of dual-surface neutral electrodes	Automatic monitoring a) of the electrical connection between the neutral electrode and high-frequency surgical unit and b) between the neutral electrode and patient c) of the symmetry of the HF partial currents i_{HF1} / i_{HF2} d) of the HF current I_{HF} as a function of the contact resistance $R_{\bar{u}}$ between the partial surfaces of the neutral electrode
Max. resistance $R_{\bar{u}}$ between the partial surfaces and of a divided neutral electrode	120 ohms \pm 20 ohms
Warning signals S_w as a function of I_{HF} and $R_{\bar{u}}$	see Diagram $S_w = f (I_{HF} , R_{\bar{u}})$
Monitoring of the HF output parameters	HF voltage, HF current, HF power Error display in safety field
Limitation of the max. HF power	adjustable
Auto. limitation of the max. activation current limit	yes, display in safety field
Auto. performance check	Self check after switching on the unit
Automatic monitoring of LF leakage currents in a monopolar applied part with a capacitively grounded neutral electrode	yes, warning signals as of 0.05 mA
Automatic monitoring of the HF leakage currents in a monopolar applied part	yes, warning signals as of 150 mA

Programmability	
Program 0	Programmed by the manufacturer
Program 1 to 9	Custom programmable by the user
Program "b" = bipolar Cutting/Coagulation	Custom programmable by the user
Program "E" = Endo Cut	Custom programmable by the user
Programming	Via keys on the front panel
Program storage	Via keys on the front panel
Program call-up	Via keys on the front panel

Documentation	
Automatic storage of operating errors	yes
Automatic storage of function errors	yes
Automatic storage of safety errors	yes

Power connection	
Rated power voltage	240 V / 230 V / 115 V / 110 V / 100 V \pm 10 %
Rated power frequency	50 / 60 Hz
Power current	4.0 A at 230 - 240 V / 8.0 A at 100 - 115 V
Power consumption in Standby mode	25 watts
Power consumption at max. HF power	620 watts 920 VA
Current consumption in Standby mode	150 mA at 230 - 240 V / 300 mA at 100 - 115 V
Potential equalization terminal	yes
Power fuses	2 slow burn, 4 A at 230 - 240 V / 8 A at 100 - 115 V

Operating mode	
Intermittent operation	ON time 25 % (e.g. activated for 10 sec. / deactivated for 30 sec.)

Classification according to EC Directive 93/42/EEC	
Class	IIb

Dimensions, weight	
W x H x D	410 x 152 x 368 mm
Weight	10 kg

Environmental conditions for shipping and storage of the unit	
Temperature	-40°C to + 70°C
Air humidity, relative	10% to 95%

Environmental conditions for operation of the unit	
Temperature	+10°C to + 40°C
Air humidity, relative	30% to 75%, noncondensing