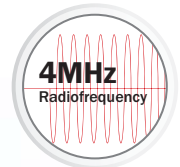




# CURIS<sup>®</sup>

4 MHz Radiofrequency Generator in combination with RaVoR<sup>™</sup> bipolar electrodes single-use



PRECISION  
ELECTROSURGERY



# CURIS® 4 MHz Radiofrequency Generator

## One unit – many applications



The CURIS® 4 MHz radiofrequency generator relies on innovative 4 MHz technology: It is gentle to the tissue and effective for coagulation, for submucosal shrinkage, and for cutting. Scientific studies have shown that tissue trauma may be reduced by using CURIS® 4 MHz radiofrequency technology.\*<sup>1</sup>

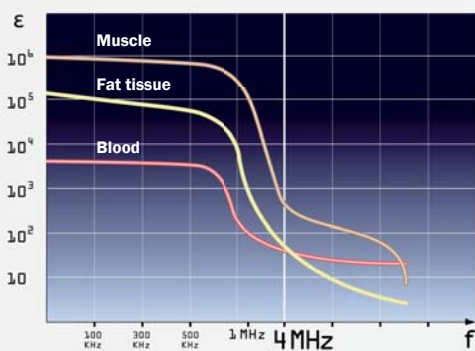
### CURIS® 4 MHz Radiofrequency Technology

The higher the frequency, the less the resistance of biological tissue to electromagnetic fields – up to the point where cell membranes are capacitively coupled. This effect is created by the CURIS® 4 MHz radiofrequency generator in all monopolar and bipolar modes. When using conventional electrosurgical units the electromagnetic field concentrates between the cells and only heats up the outer layer. However, with the CURIS® 4 MHz radiofrequency generator cell membranes are conductive, and energy is absorbed evenly inside the cells. As a result, energy is administered gently and in a highly focused fashion. Precise monopolar cuts are possible while lateral heat damage is kept to a minimum\*<sup>2</sup>.

\*<sup>1</sup> Muehlhays G et al., A study on the type of lesions achieved by three electrosurgical methods and their way of healing. Romanian Journal of Morphology & Embryology. 2015; 56(4): 1383-1388

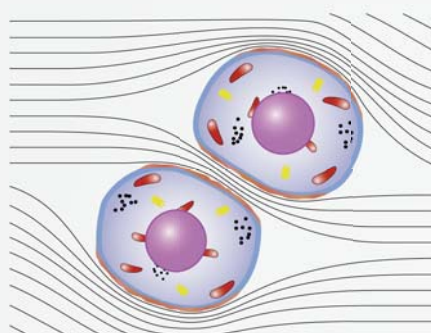
\*<sup>2</sup> Hoffmann TK et al., Comparative analysis of resection tools suited for transoral robot-assisted surgery. European Archives Oto-Rhino-Laryngology. 2014; 271(5): 1207-1213

**Permittivity/Frequency**



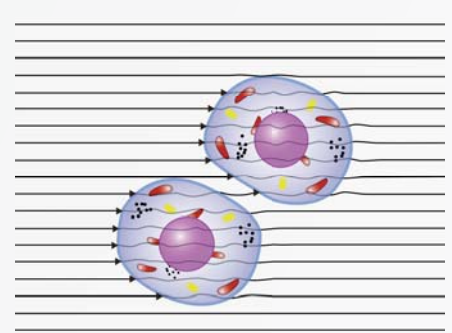
This diagram shows the permittivity of tissue, which depends on the frequency of the electromagnetic field.

**Conventional electrosurgical units**



The electromagnetic field concentrates between the cells and heats up only the outer layer.

**CURIS® 4 MHz Radiofrequency Generator**



Cell membranes are conductive and the energy is absorbed evenly inside the cells. The results are highly focussed tissue effects.



# Precision thanks to **AutoRF™**

AutoRF™ is a smart impedance control function that will tailor the power output of the CURIS® 4 MHz radiofrequency generator to the tissue condition. Whether it is cutting through different types of tissue (such as mucosa, muscle, fat or connective tissue) or altering tissue conditions during coagulation, the AutoRF™ feature will deliver adapted power output as required by the different tissue impedance.

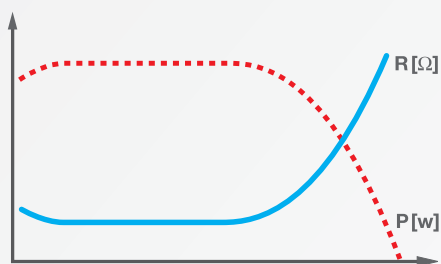
When dissecting different types of tissue in one cut (skin, fat, muscles), the unit has to process and respond to the AutoRF™ data in a flash. For this reason, the CURIS® 4 MHz radiofrequency generator has two microprocessors for additional safety and speed.



## p<sup>3</sup>™-Technology

p<sup>3</sup>™, which stands for pulsed power performance, is active in all coagulation modes of the CURIS® 4 MHz radiofrequency generator. Radiofrequency energy is delivered in about 50 small packages per second. Due to the pulsed power output, there are short breaks between the individual packages, giving the tissue enough time to absorb the energy. Highly focused, yet gentle coagulation with minimal thermal damage is possible.

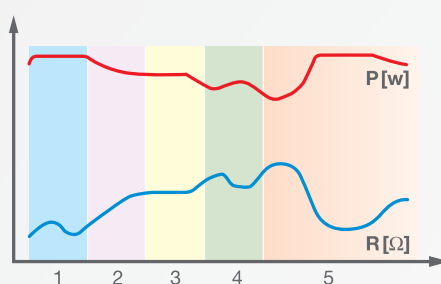
### CURIS® RaVoR™



#### RaVoR™ mode:

The pulsed power output with short intervals between the individual packages gives enough time for the coagulated tissue to absorb the applied energy.

### CURIS® CUT

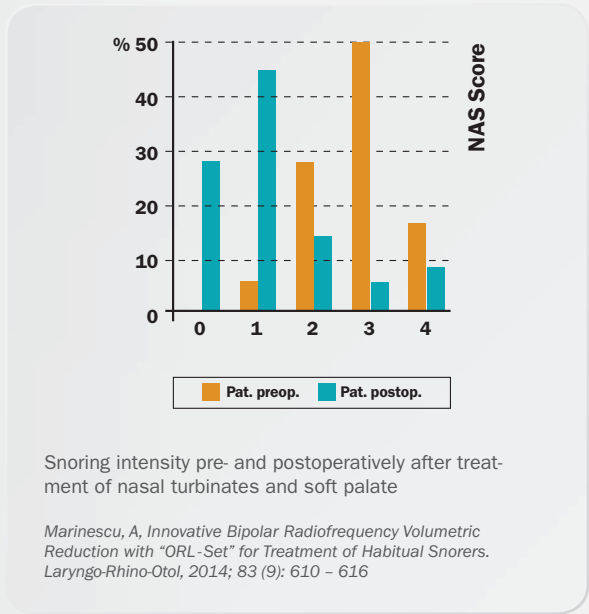
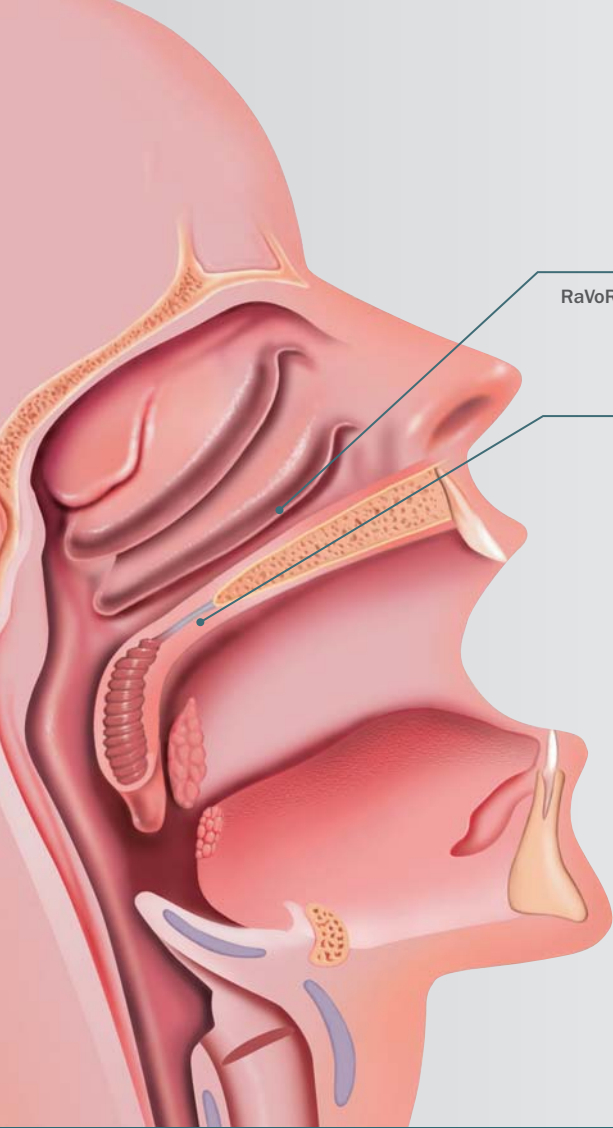


#### Monopolar cutting:

Sections 1 to 5 show the different kinds of tissues and cutting speeds to which the unit adjusts its power output automatically. "R" signifies electric tissue resistance and "P" the actual power output.



CURIS®: one device  
– many applications



“Bipolar radiofrequency volumetric tissue reduction, using Sutter technology, appears to have promising results for patients with snoring and mild OSA. One treatment session resulted in significant reduction in snoring intensity, improvement in sleep quality and QOL, and reduction in daytime sleepiness.”

**Pang KP et al. Sutter bipolar radiofrequency volumetric tissue reduction of palate for snoring and mild obstructive sleep apnoea: is one treatment adequate? The Journal of Laryngology & Otology. 2009; 123(7): 750-754**

## RaVoR™ Radiofrequency Volume Reduction

RaVoR™ of the inferior turbinates, soft palate, tongue base, etc. is an interstitial application for submucosal tissue shrinkage. Precise delivery of energy and smart power adjustment depending on actual tissue impedance aid in creating consistent and repeatable lesions. As soon as the right size of a lesion has been achieved, the CURIS® 4 MHz radiofrequency generator will automatically stop the activation (AUTO STOP mode), and give an acoustic signal. The treated tissue is decomposed by the body’s own immune system and transformed into fibrous scar tissue. This process leads to a shrinkage and stiffening of the treated area. Sutter has developed different bipolar electrodes for the treatment of sleep-related breathing disorders based on the anatomical sites of obstruction.

### Audio Feedback

If desired, an acoustic feedback function (AUDIO FEEDBACK) can be activated. While a lesion is created in RaVoR™ mode, the change in tissue condition is signaled by a changing pitch: The further the lesion progresses, the higher the activation sound. This mode may also be used to potentially increase the patient’s comfort. The patient will be able to listen and follow what happens inside the tissue.

# RaVoR™ bipolar electrodes single-use

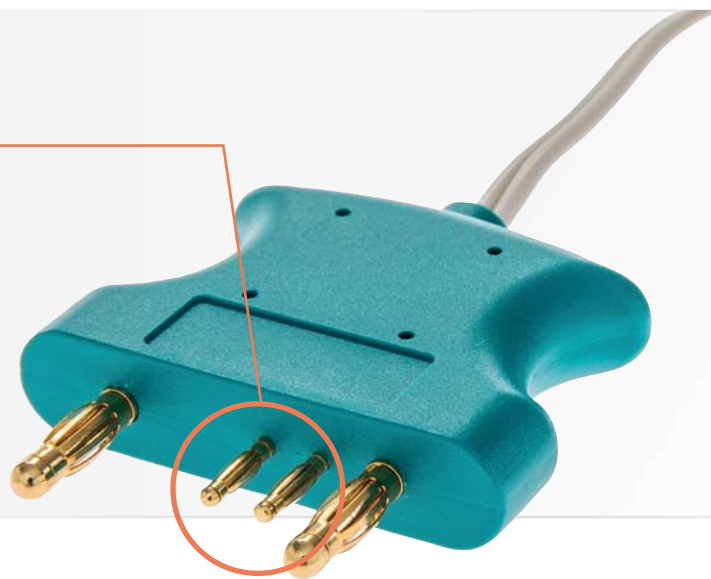


“The RaVoR™ bipolar electrodes single-use for the reduction of the inferior turbinates are a convenient solution for my private practice. My staff and I enjoy the ease of use due to the new plug and operate feature.”

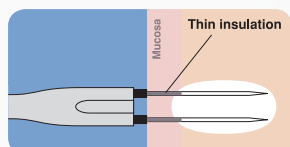
**S. Grupp, MD, Freiburg (Germany)**

## Plug and operate

- Convenient handling for surgeon and staff
- Perfect match with the CURIS® 4MHz radiofrequency generator
- Auto recognition of the instrument and instant selection of the RaVoR™ program
- CURIS® – Precision thanks to AutoRF™



## RaVoR™ of the inferior turbinates



**70 44 62**  
**RaVoR™** bipolar electrode  
 for the inferior turbinates, single-use  
 working length: 103 mm

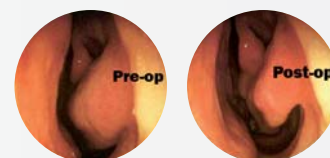


Schematic view of the **puncture sites** for the application of radiofrequency energy of the hypertrophic turbinates.



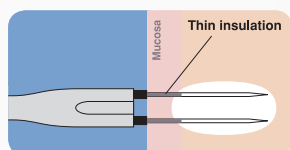
“RaVoR™ is a modern surgical technique showing good and long-lasting treatment results when used to reduce the volume of hypertrophic turbinates. At the same time it preserves the mucosa and its function.”

**R. Romeo, MD, Israelitic Hospital**  
 Rome (Italy)



**Inferior turbinate** – Preoperative condition and six months postoperatively with significantly enlarged nasal passage.

## RaVoR™ of the soft palate



**70 44 95**  
**RaVoR™** bipolar electrodes  
 for the soft palate, single-use  
 working length: 110 mm



“The radiofrequency assisted soft palate procedure is a minimally invasive, safe and quick procedure. It is well tolerated by patients. We have not observed any bleeding that needed special attention.”

**D. Brehmer, MD**  
 Göttingen (Germany)



**Puncture sites** for the application of radiofrequency energy in the **soft palate**



**Dissection of surplus uvula tissue and incision lines for the triangular excision of the posterior palatal pillars.**  
 (With ARROWtip™ monopolar microdissection electrode, REF: 36 03 42)

# CURIS® Basic set/Accessories

## CURIS® Basic set

### 87 00 10 – CURIS® basic set with single-use patient plates

Anzahl	REF	Beschreibung
1	<b>36 01 00-01</b>	CURIS® 4 MHz radiofrequency generator (incl. mains cord, user's manual and test protocol)
1	<b>36 01 10</b>	Foot switch two pedals for CURIS® (cut & coag), cable length: 4 m
1	<b>37 01 54L</b>	Bipolar cable for CURIS®, length: 3 m
1	<b>36 07 04</b>	Monopolar handpiece (pencil) cut & coag, shaft 2.4 mm, cable length: 3 m
1	<b>36 02 38</b>	Cable for single-use patient plates, length: 3 m
1 (x50)	<b>36 02 22</b>	Safety patient plates, single-use, packing 5 x 10 pcs. (not shown)



**36 09 00**  
Fuego trolley

### Fuego Trolley

The trolley has a solid design and guarantees that the CURIS® 4 MHz radiofrequency generator will not shift. It also comes with a hook to mount the foot switch.

Two storage baskets for accessories and documentation.



**99 01 10**  
CURIS® trolley case

### Trolley Case for CURIS® 4 MHz radiofrequency generator

The CURIS® trolley case is ideally suited to preserve your radiofrequency generator from damage.

#### Disclaimer:

The information presented herein has been carefully researched and compiled with the help of specialist physicians. They are not meant to serve as a detailed treatment guide. They do not replace the user instructions for the medical devices used. Sutter accepts no liability for the treatment results beyond the mandatory legal regulations.

Products shown in this catalog are available in the EU. Availability in other markets may vary.

## CURIS® – Technical data

RF output max.	performance	operating frequency		
<b>monopolar</b>				
CUT 1 (unmodulated)	100 W ± 20 % 600 Ω	4.0 MHz	Modulation frequency	33 kHz
CUT 2 (modulated)	80 W ± 20 % 600 Ω	4.0 MHz	Mains supply	100-240 V; 50/60 Hz
CONTACT (Coag)	80 W ± 20 % 400 Ω	4.0 MHz	Measurements W x H x D	320 mm x 170 mm x 385 mm
SOFTSPRAY (Coag)	60 W ± 20 % 600 Ω	4.0 MHz	Weight	approx. 5.0 kg
<b>bipolar</b>			Mode of operation	Intermittent INT 10 s / 30 s equals 25 % ED
BICUT 1	80 W ± 20 % 300 Ω	4.0 MHz	Standards	DIN EN 60601-1; DIN EN 60601-2-2
BICUT 2	80 W ± 20 % 300 Ω	4.0 MHz	Safety class	I
EXCISE (Cut)	80 W ± 20 % 300 Ω	4.0 MHz	EMC (Interference suppr.)	EN 60601-1-2
MACRO (Coag)	80 W ± 20 % 50 Ω	4.0 MHz	Type	CF (cardiac floating), defibrillator-proof
PRECISE (Coag)	50 W ± 20 % 50 Ω	4.0 MHz	German MPG class.	II b
RaVoR™	40 W ± 20 % 50 Ω	4.0 MHz	Quality assurance	EN ISO 13485



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