

# HNM DISPOSABLE RF **BIPOLAR ABLATOR**

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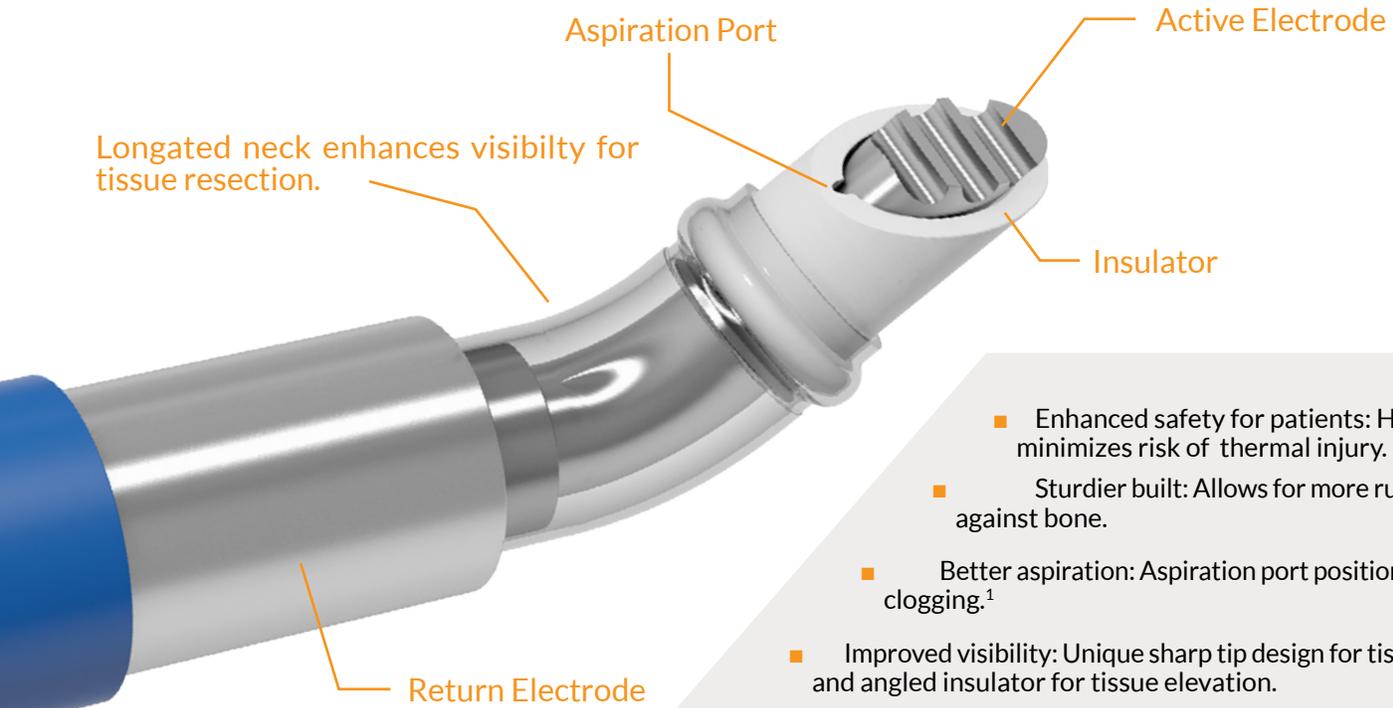


**HNM**   
**SPORTS MEDICINE**

# HIGH-EFFICIENCY RF ABLATORS

## FOR ARTHROSCOPY

Due to its high-efficiency design features, HNM RF Bipolar Ablator arthroscopy ablaters require less power than other standard bipolar ablaters to achieve aggressive tissue removal. Less power means less heating of the fluid in the joint, and reduced chances for thermal injury to the patient. The HNM RF Bipolar Ablators do not require a special high-powered generator to operate. HNM RF Bipolar Ablators are used with standard multi-purpose generators already in operating rooms.



- Enhanced safety for patients: High efficiency, minimizes risk of thermal injury.
- Sturdier built: Allows for more rugged handling against bone.
- Better aspiration: Aspiration port positioned to prevent clogging.<sup>1</sup>
- Improved visibility: Unique sharp tip design for tissue dissection and angled insulator for tissue elevation.
- Cost efficient: No new equipment needed. Compatible with most standard eletrosurgical generator with footswitch control (i.e. Valleylab, Bovie, Erbe and ConMed).

<sup>1</sup>On models where aspiration is available.

## ORDER INFORMATION



HNM-31-150365  
3.3mm 90° ASPIRATING & NON-ASPIRATING



HNM-31-150367  
2.4mm 55° NON-ASPIRATING



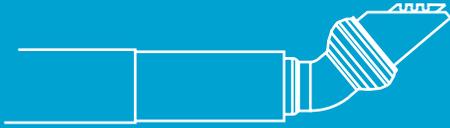
HNM-31-150363  
3.3mm 50° ASPIRATING & NON -ASPIRATING



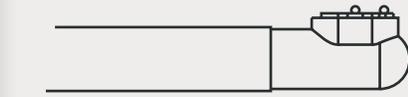
HNM-31-150368  
1.8mm 60° NON-ASPIRATING

# COMPETITIVE COMPARISON

## HNM 3.3MM ASPIRATING ABLATOR



## OTHER



ARTHROCARE MEGAVAC 90 WAND

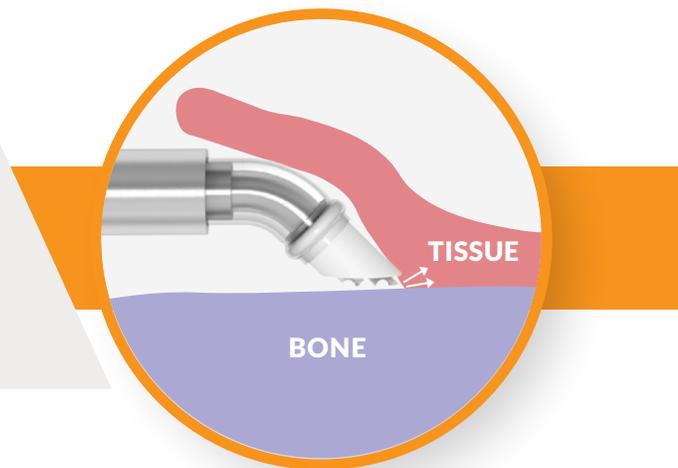


MITEK COOLPULSE 90 ELECTRODE

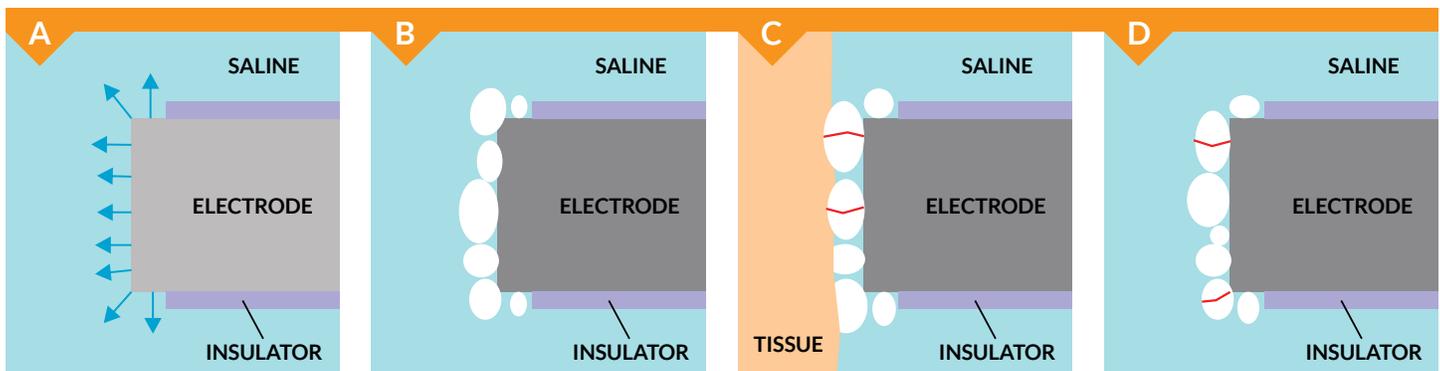
The distal end configuration of an HNM RF Bipolar Ablator, aspirating compared to aspirating ablaters by Arthrocare and Mitek. The HNM RF Bipolar Ablator is uniquely configured for tissue dissection and better visibility.

The sharp distal edge of the HNM RF Bipolar Ablator may be used for resection, for stripping soft tissue from bone, or as a tissue liberator with the angled insulator elevating the tissue.

Low level RF power may be applied during dissection to aid the cutting edge in separating tissue.



# ABLATION PRINCIPLES

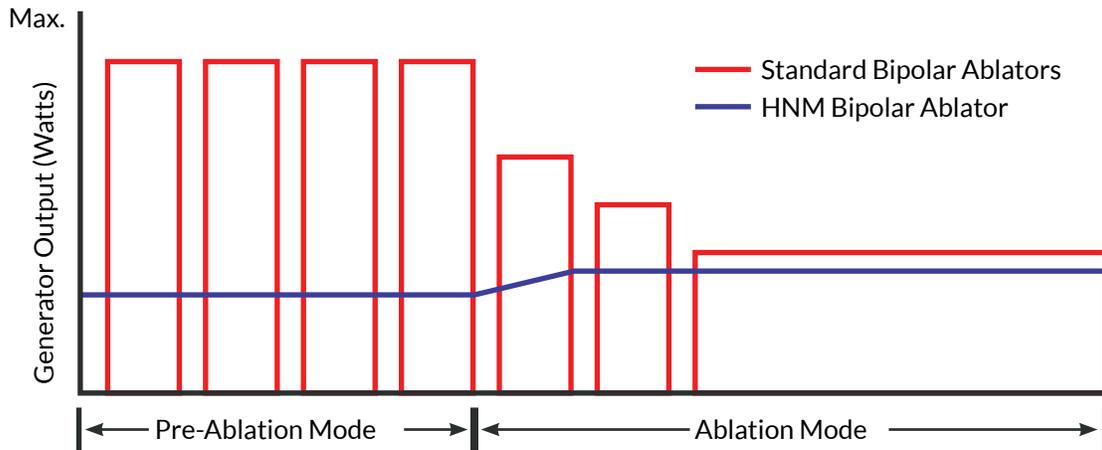


Note: In steps A) and B) above the ablator is in “pre-ablation” mode. In steps C) and D) the electrode is in ablation mode, because energy is traveling across bubbles as sparks. Anytime that an ablator is energized but not making bubbles, it is in pre-ablation mode. All bipolar ablaters

- A)** RF current (blue arrows) flows from all uninsulated surfaces into the saline, and through the saline to the return electrode (not shown).
- B)** The current flow heats the saline in the vicinity of the electrode until the saline boils forming bubbles over the electrode surface.
- C)** When the bubbles reach a critical size, plasma channels (sparks) form within some of the bubbles.
- D)** Bringing the electrode close to tissue allows energy to travel through the plasma channels within the bubbles to the tissue vaporizing it.

# PRE-ABLATION POWER LEVELS

The highly efficient HNM RF Bipolar Ablators do not need high power to ignite and therefore are used with standard electro-surgical generators. In the pre-ablation mode the power is reduced.



Note: A comparison of pre-ablation and ablation power levels as a function of time for standard bipolar ablaters and for the HNM RF Bipolar Ablator. Standard bipolar ablaters use pulses of very high power to boil the saline and initiate sparking through the bubbles.

## FLUID TEMPERATURES

All of the RF energy supplied to an arthroscopy ablator is converted to heat. Hence, an ablator operating at 300 Watts is effectively a 300 Watt heater submerged in the fluid which fills the joint space. The flow of fluid through the joint space carries some of this heat away. Low flow rates and/or high ablator power levels will result in high intra-articular fluid temperatures. Because the HNM RF Bipolar Ablators work at a much lower power levels than other standard bipolar ablaters, the temperature rise for a given flow rate will be much less.

## DEFAULT POWER LEVELS

When another standard bipolar ablator is connected to its dedicated generator, the generator is automatically set to a default power level suitable for the connected device. The default power levels for three other standard bipolar ablaters is between 220 and 310 Watts (as shown below). The surgeon can increase the power level for the standard bipolar ablaters to as much as 380 Watts. The initial power level for the HNM RF Bipolar Ablator is set by the surgeon, and the maximum recommended power level for the HNM bipolar ablator is 120 Watts.

## ASPIRATION FLOW TEMPERATURE

Heated saline, bubbles and ablation by products are aspirated from the region of the probe distal tip. The HNM RF Bipolar Ablators, aspirating have a unique, highly efficient aspiration configuration which removes less heat from the region. This, along with the much lower power levels at which the device operates, causes less temperature rise in the aspiration flow, while maintaining highly effective ablation rate.

PARAMETERS	HNM RF ABLATOR	MITEK COOLPULSE 90	ATHROCARE SUPER TURBOVAC 90	STRYKER 90-S	MITEK PREMIER 90
Recommended Power Settings (Watts)	100	220	270	310	240
Saline Outflow Temperature Rise (°C)*	11.8	28.6	30	27.2	~
Ablation Rate (g/min)*	0.58	0.61	0.52	0.31	~
Works with Standard RF Generators	YES	NO	NO	NO	NO

\*Probes at default settings