



## EOS Extraoral Suction System

The EOS system Aerosols and Droplets annihilator is designed and engineered to reduce droplet and aerosol spray that is an innate part of dental care.

During dental procedures Droplets and Aerosols are passed on to the dentist and staff's bodies.

Patient care and the safety and health of the staff and the dentist is paramount, for the elimination of blood, aerosols and fine liquid particles.

All of which are annihilated by the ADS EOS system



**H-14 Hepa Filtration System:** The 3 layered Hepa filtration system, stops virus and bacteria -> 0.3 microns with a 99.995% efficiency.

**Precision Water Vaporization Filtering:** Ensures the immediate drying in the cabinet base and emits clean dry air.

**Medical Grade UV-C Light Disinfectant System:** The UV-C light in coordination with the H-14 Hepa filter captures and kills bacteria, germs and virus.



**The Heart of the System:** Engineering and Design dictated a reliable American made motor that includes advantages such as longevity, noise reduction, negative voltage which is tenfold of the suction power of the central negative voltage.



**Precision Control System:** Digitized display screen reads out 10 various levels of suction.

**Monitoring of Filter Life:** Digitized monitoring system displays the life expectancy of the Hepa filtration.

**Dual-Use Modes:** Level 1-3 is for air purification. Level 4-10 is for the capture aerosols, bacteria, droplets and splashing blood. Also used in the disinfecting mode.



**Rear Exhaust Design:** Minimal noise reduction assuring patient and staff comfort. Assurance of clean bacteria and virus free dry exhaust.



## **Before use**

During treatment, high volume of Droplets and Aerosols produced by high-speed handpieces and ultrasonic scalers, putting the surgery and practitioners in high risk of



## **After use**

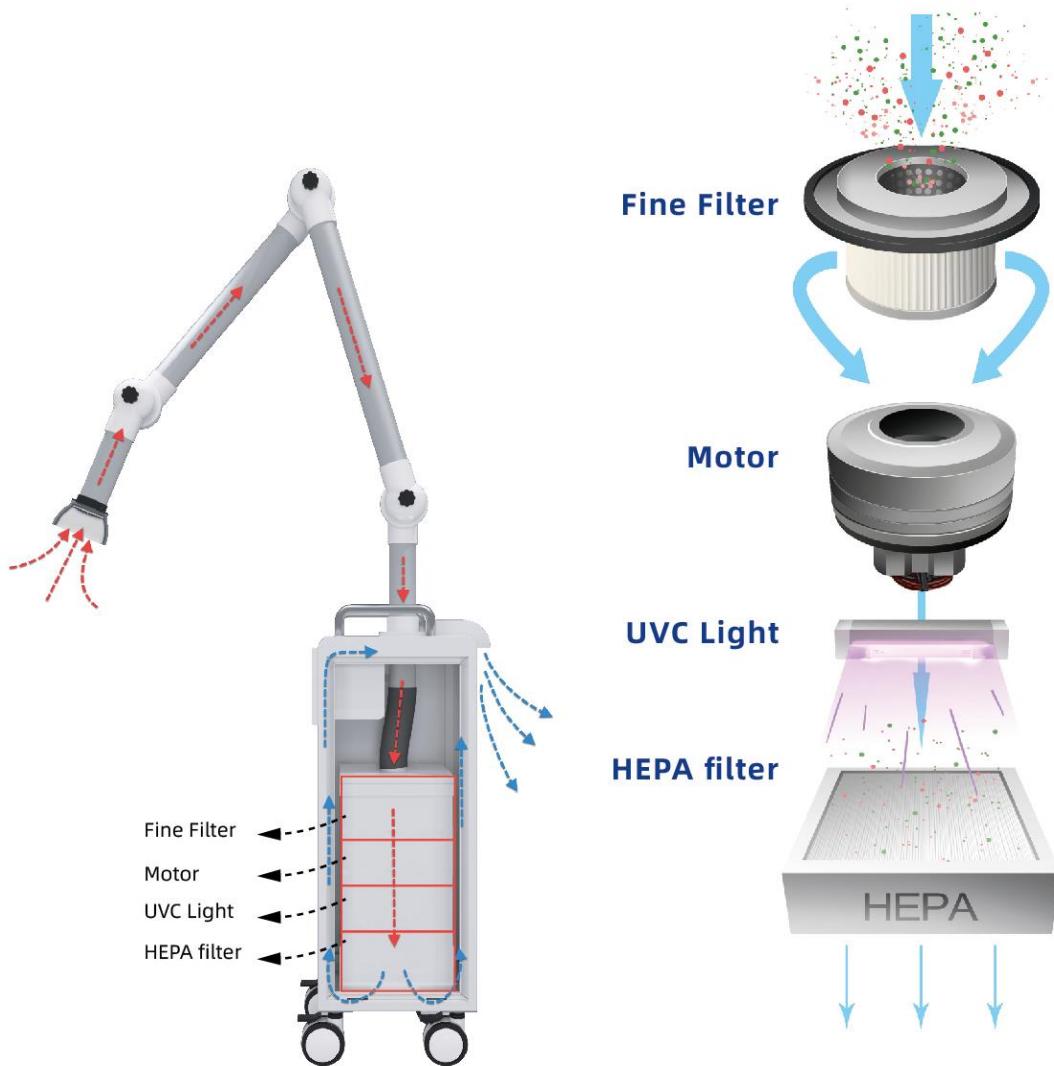
ADS Extraoral Dental Suction System removes the Droplets and Aerosols effectively, highly reduce the infection risk, keep clean air for the surgery.



Model		EOS Extraoral Suction System				
Voltage		AC110V 60Hz	Electric current	12-20A		
Power		1160W	Fuse wire	F25A 110V		
Flow		105CFM	Suction Power	10KPa (10 Different Levels)		
Fine Filter		F8	Average Efficiency (EM) for 0.4MM particles (%),90<EM<95 Minimum efficiency* for 0.4MM particles (%),55 ( F8 matches European standard EN 779:2012 and ISO16890)			
HEPA Filter Level		H14	H14, blocking virus and germs $\geq 0.3\mu\text{m}$ with 99.995% filtration efficiency (H14 matches European standard EN 1822:2009, ISO16890 and DOE-STD-3020-2015 Specification for HEPA Filters Used by DOE Contractors)			
Noise Decibel		58dB (Tested under laboratory environment and 6-9 Inches distance from the suction mouth piece hood)				
Suction Arm Caliber		$\Phi 2''$				
<b>UV Light Specification</b>						
Type	UV-C		Lamp Tube Length	5.3"		
Lamp Tube Caliber	0.6"		Lamp Cap Caliber	0.7"		
Wave Length	254nm		Glass Tube	Ozone-free quartz glass		
Power(W)	4W		Voltage (V)	$30 \pm 15\%$		
Electricity (mA)	$145 \pm 15\%$		Radiation Intensity ( $\mu\text{W}/\text{cm}^2$ )	$\geq 8 @ 39.4''$		
Steady time (min )	5		Average Lifetime (h)	$> 8000$ (Continuous use)		
Lamp Cap	G5 Aluminum head		Wire Material	Molybdenum Wire		
Gas-filling	Pure Argon		Mercury	Pure Liquid Mercury <15mg		

## • Operation Principle

- The EOS system collects aerosols, droplets, dust and pathogens produced during routine dental procedures through a suction mouthpiece hood. Particulate matter is filtrated by the dust/particle filter. The HEPA filter captures particles down to 0.3 microns with 99.995% efficiency. Clean dry air is exhausted from the base cabinet.
- The UVC lights are positioned on the HEPA filter and kills any remaining bacteria and viruses captured by the HEPA filter and are exhausted from the cabinet base.





	Suction arm	Case
Packing Size	27.2"x10.2"x9"	14.6"x14.2"x39.4"
Net Weight	3.2lbs	94.2lbs
Gross Weight	5lbs	98.6lbs

**What is a HEPA filter?**

## **HEPA (High Efficiency Particulate Air Filter)**

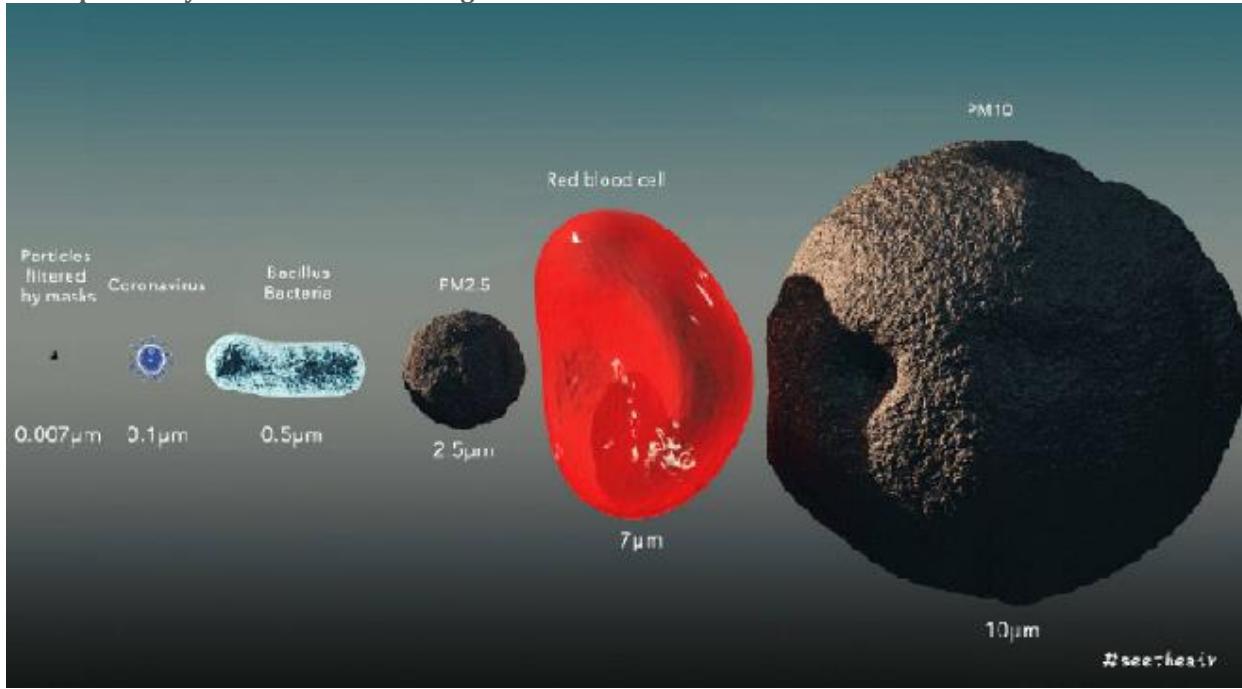
HEPA is an acronym which stands for High Efficiency Air Particulate, which is made by the fiberglass that is a disorder fibrous mat arranged. The fiberglass caliber is 0.5~2.0 micron and its high level of filtration efficiency for the smallest as well as the largest particulate contaminants can stop virus and germs  $\geq 0.3\mu\text{m}$  with 99.995% efficiency.

The HEPA filter is developed during the period of the Manhattan Project that belongs to the US Nuclear Weapons Development, and it was used to capture extreme and dangerous radioactive particles. Nowadays, when scientists found out its high efficiency for capturing Droplets, Aerosols, and the particles of Bacteria & viruses, the HEPA filter is used in the medical industry at large.

### **Will the smallest viruses pass through the HEPA filter?**

As the Filtration Mechanisms we learn above, the 0.3-micron benchmark is used in efficiency ratings, because it approximates the most difficult particle size for a filter to capture. HEPA filters are even more efficient in removing particles that are smaller than 0.3 microns and larger than 0.3 microns. The fact that a HEPA filter's removal efficiency increases as particle size decreases below 0.3 microns is counter intuitive. However, this is a proven and accepted fact in the filtration sciences.

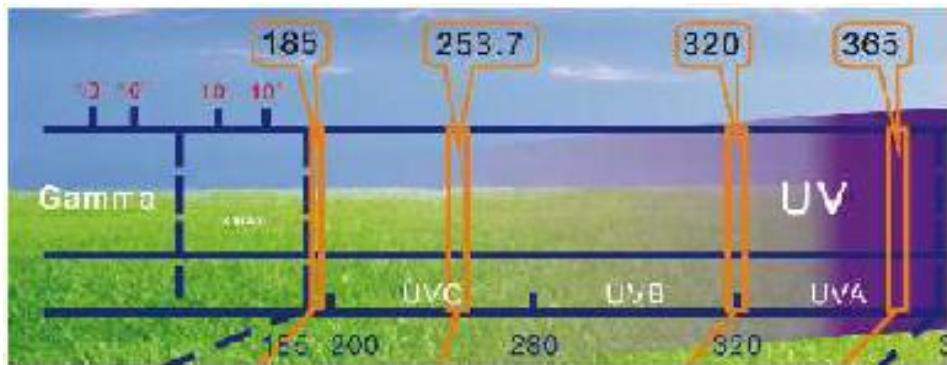
The virus sizes are within with  $0.02\mu\text{m} \sim 0.3\mu\text{m}$ . The corona virus size is  $0.15\mu\text{m}$  around. Both of them are captured by the HEPA filter through the diffuse and static effect.



In ISO16890, European standard EN 1822:2009, EN 779:2012 and DOE-STD-3020-2015

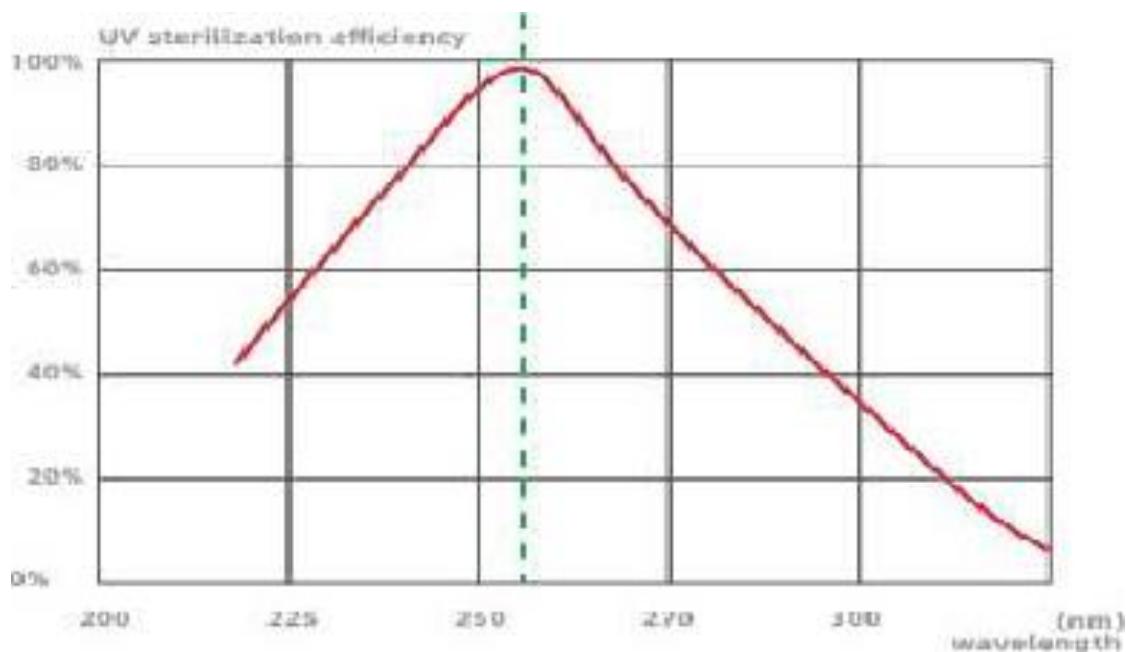
Specification for HEPA Filters Used by DOE Contractors, all mention HEPA filter H14 is medical grade filter which filter minimum 99.995% particles @ 0.3 microns (PM 0.3) or larger.

## Use UV Light To Be a Supplement

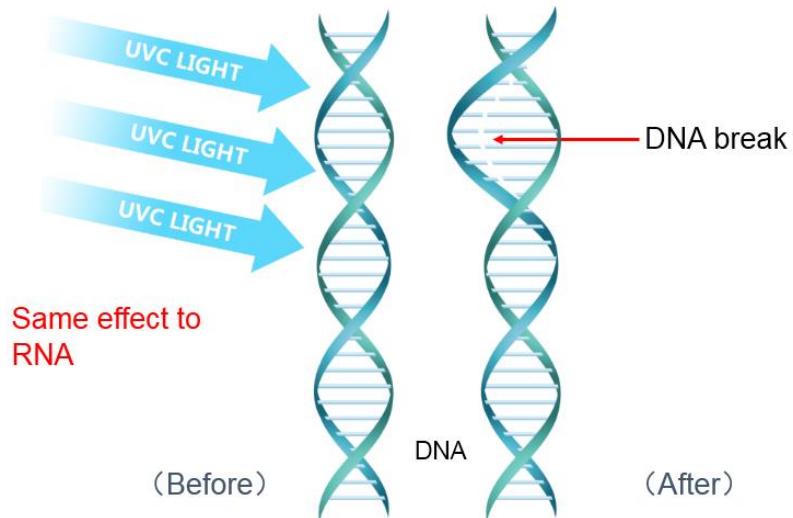


UV(Ultraviolet) Light refers to the region of the electromagnetic spectrum between visible light and X-rays, with a wavelength falling between 400 and 10 nanometers. This electromagnetic radiation is not visible to the human eye, because it has a shorter wavelength and higher frequency than the light our brain perceives as images.

EOS is using 254mm length wave UVC light that is extremely harmful and almost completely absorbed by Earth's atmosphere. UV radiation can make DNA molecular bond rupture, resulting in bacteria not able to breed and die.



## How dose UVC light kill the bacteria and virus?



Ultraviolet (UV) light kills cells by damaging their DNA. The light initiates a reaction between two molecules of thymine, one of the bases that make up DNA. The resulting thymine dimer is very stable, but repair of this kind of DNA damage usually by excising or removing the two bases and filling in the gaps with new nucleotides is fairly efficient. Even so, it breaks down when the damage is extensive.



The longer the exposure to UV light, the more thymine dimers are formed in the DNA and the greater the risk of an incorrect repair or a "missed" dimer. If cellular processes are disrupted because of an incorrect repair or remaining damage, the cell cannot carry out its normal functions. At this point, there are two possibilities, depending on the extent and location of the damage. If the damage is not too extensive, cancerous or precancerous cells are created from healthy cells. If it is widespread, the cell will die.

## UVA, UVB and UVC Comparison

	<b>UVA</b>	<b>UVB</b>	<b>UVC</b>
<b>Spectral Range</b>	315 + 400nm	280-315 nm	100-280 nm
<b>Summary</b>	ILV (CI E S 017/E:2011)	ILV (CI E S 017/E:2011)	LV (CI E S 017/E:2011)
<b>Wavelength</b>	Longest wave length	Medium-wavelength	Shortest wavelength
<b>Antiviruses</b>	Non effective	Non effective	Effective
<b>UV radiation Effect</b>	Prolonged exposure to UV-A waves without adequate protection can have dangerous health consequences.	All effects are similar with UVA, but higher doses of UVB cause sunburn which increases human likelihood of developing cancer.	It's extremely harmful and almost completely absorbed by Earth's atmosphere. UV radiation can make DNA molecular bond rupture, resulting in bacteria cannot breed and die. The ozone can effectively kill bacteria.
<b>Applications</b>	Technically often used for the adhesive UV bonding and curing of varnishes.	Play an important part in the photo stability.	It is commonly used as a disinfectant in food, air, and water to kill microorganisms by destroying their cells' nucleic acids.

 U.S. Department of Health & Human Services
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### Establishment Registration & Device Listing

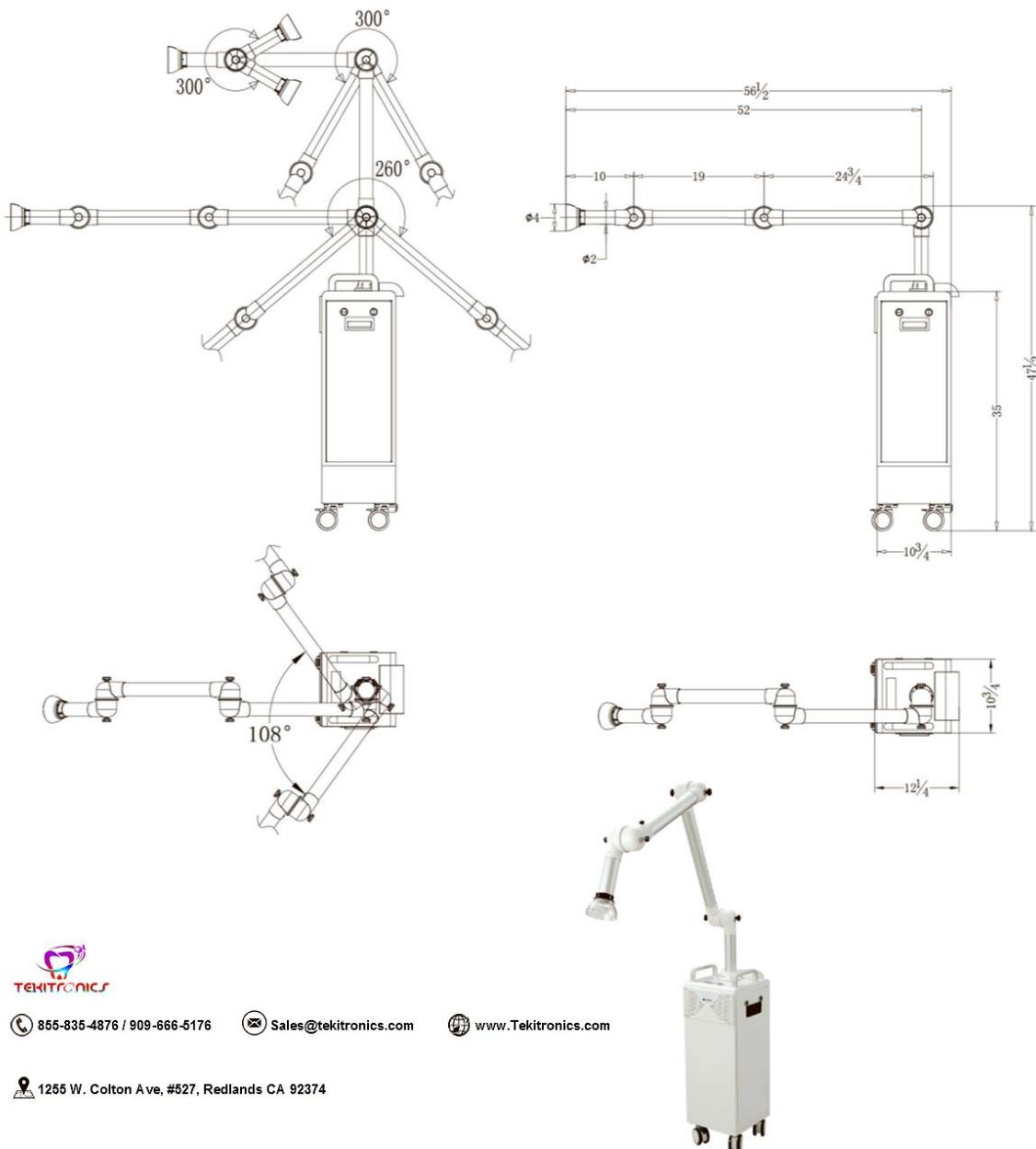
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<b>Proprietary Name:</b> EOS Extraoral Suction System <b>Classification Name:</b> UNIT, SUCTION OPERATORY <b>Product Code:</b> EBR <b>Device Class:</b> 1 <b>Regulation Number:</b> 872.6640 <b>Medical Specialty:</b> Dental <b>Registered Establishment Name:</b> ADS DENTAL SYSTEM INC. <b>Registered Establishment Number:</b> 3015376465 <b>Owner/Operator:</b> ADS Dental System Inc. <b>Owner/Operator Number:</b> 10062239 <b>Establishment Operations:</b> Repackager/Relabeler	

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# Extraoral Dental Suction System Dimensions



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