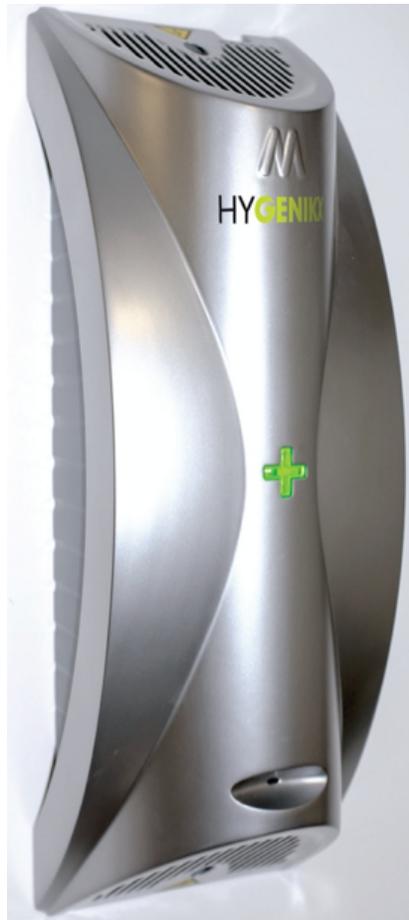


HyGenikx Technologies

Frequently Asked Questions January 2021



HyGenikx – A Key Component of Your Hygiene Strategy

HYGENIKX Technologies

Answers to Those Frequently Asked Questions

How would you explain the HyGenikx Technology in simple terms?

The special Germicidal UV lamp combined with Titanium Dioxide catalyst cleaning plates eliminate any odors and harmful microorganisms drawn into the unit. The lamp also produces a purifying plasma (Plasma Quatro), which convects from the unit and circulates around any room where the unit is installed, sanitizing the air and surfaces. Part of the process also has an ionizing effect, which will reduce the amount of airborne dust and debris.

Can you explain the HyGenikx technology in more detail?

HyGenikx units are fitted with powerful dual waveband Ultraviolet lamps. A high-intensity broad spectrum ultraviolet lamp, with UVC 254 nm germicidal light wavelengths is the first part of photocatalytic air purification technology. A wider set of ultraviolet wavelength 185 nm are employed for catalyst activation. Although UV light alone will degrade toxic organic compounds, reaction rates are much faster with photocatalytic assistance. The catalyst material in the HyGenikx [photocatalytic purifier] is Titanium Dioxide, TiO₂. The Titanium dioxide is also a semiconductor. When a semiconductor is bombarded with light of certain wavelengths, electrons in the material's valence band are excited into the conduction band. This means they are free to move and their energy ends up splitting nearby water molecules into two parts, hydroxyl radicals and super-oxide ions. Free radicals are uncharged atoms or molecules with unpaired electrons. Unpaired electrons are highly reactive, so free radicals quickly engage in chemical reactions. Hydroxyl radicals are among the most powerful oxidizers in the world, stronger than chlorine, ozone, and peroxide, and very short lived. Superoxide is created by the addition of one electron to oxygen. This free radical has a relatively long half-life: less than one second. Bacteria, viruses, and volatile organic compounds (VOCs) are held together by carbon-carbon, carbon-oxygen, or carbon-hydrogen bonds. Oxidizers destroy these bonds and fragment the molecule into smaller compounds which are broken down until only carbon dioxide and water

are left. A photocatalytic purifier can eliminate particles down to 0.001 microns from air, including the very tiny lung penetrating particles. Most HEPA air filters cannot remove particles smaller than 0.3 microns. Pollens, dust mite allergens, pet dander, mold, bacteria, and viruses in the air, are on the list of items removed through Photocatalytic reaction. HyGenikx, incorporating this technology, can eliminate toxic gas VOC (volatile organic compounds) pollutants including formaldehyde, exhaust fumes, benzene, toluene, and odors like ammonia and hydrogen sulfide from our air.

How do I know the **HyGenikx** unit is working?

Firstly, the green cross light indicator will be illuminated on the front of the unit to show the product is operating. **Secondly**, after 12 months of use the built-in warning system will tell you when the lamp (and battery) requires replacement to ensure peak efficiency. **Thirdly**, there will be a definite change in the environmental air quality. Internal environments that have a usual lingering background odor, whether from cooking/food, body odor, cleaning products, waste material, or a combination of these, will smell noticeably fresher. This change will be most obvious at the start of a working day, clearly demonstrating the unit is working. Areas where it is easier to monitor performance are those with obvious odor issues, such as a washroom, changing room or bin store. Here, odors will be significantly reduced or eliminated completely.

How is the **HyGenikx** products different to “fragrance units?”

(General) The **HyGenikx** goes far beyond odor control. Rather than masking odors they remove smells by targeting and killing the root cause, which is usually microorganisms. (Food) In food storage microorganisms are responsible for spoilage and the shortening of food life. Independent testing has demonstrated how we extend food life (specifically vegetables and soft fruits) by reducing the microorganisms.

Does the **HyGenikx** unit emit an odour? Is there a fragrance?

The absence of unpleasant background odors is usually the first thing customers notice about the **HyGenikx** unit. The “smell” is frequently described as being “clean and fresh” and has often been likened to

mountain air. No masking fragrances are used. **Note:** *Within the first 48 hours of use it is not unusual for the unit to produce a slightly metallic odor, this is caused by the lamp “bedding in.” This should dissipate within 48 hours.*

In addition to unpleasant and unwanted odors, what are the various microorganisms that are reduced, or eliminated, by the HyGenikx technology?

Various Viruses and Bacteria, Mold, Fungi. Multiple independent tests demonstrate the efficacy against the most prevalent of these including Listeria, E coli, Staphylococcus aureus, Staphylococcus epidermis, Aspergillus fumigatus, MS-2 Coliphage, MRSA and Clostridium difficile.

Does air need to pass through a HyGenikx unit to be sanitized?

No. The HyGenikx technology uses both internal and external processes so, although contaminants passing through the unit will be sanitized, it also produces cleaning air which circulates throughout the unit's environment. As such, the HyGenikx unit can cover a large area.

Does the HyGenikx unit reduce bacteria on walls and surfaces or just in the air?

Cleaning air from the HyGenikx unit will target and reduce all contamination wherever the “clean” air can reach. Test results show substantial reduction in both air and surface contamination in relatively short periods of time.

What is Germicidal Irradiation and how does it “work?”

Germicidal Irradiation by dual UV light (Ultraviolet) kills microorganisms (bacteria, viruses, and mold) by disrupting their DNA and removing their reproductive capabilities. • **PCO – Photocatalytic Oxidation**, UV reacts with our Catalyst (TiO₂ Titanium Dioxide) to form highly reactive but short-lived oxidizing Hydroxyl Radicals (OH) which break down Volatile Organic Compounds (VOCs). • Interaction of the Dual waveband UV with the TiO₂ heterogeneous catalyst both creates and breaks down Oxygen molecules

transforming Oxygen into a highly reactive states of Ozone and Superoxide Ions which leave the unit as “**Plasma Quatro**”.

What is **Plasma Quatro**?

Plasma Quatro is the gas energized by the high intensity UV light. It leaves the unit with the airflow and consists of a mixture of activated oxygen, triatomic oxygen, and superoxide ions. These interact with each other giving a very efficient purification of the air and all exposed surfaces. This is many times, more efficient than ozone or UV light working alone.

The **HyGenikx** unit produces trace amounts of ozone. Is this dangerous?

Whilst the **HyGenikx** unit is not an ozone generator, a very small volume of ozone is released as a by-product of the combination of the various technologies used. This unique combination of technologies is guaranteed to both achieve all of the required results and be completely safe in operation. In every case the ozone levels that are present fall well below the lowest international safety levels worldwide (World Health Organization - 0.05ppm), as stipulated by EUOTA. This has been verified for all unit variations with independent laboratory testing carried out by “Odournet”. We all breathe ozone, every day of our life, in fact what we perceive to be fresh air is approximately 0.013 ppm of ozone. If there was a thunderstorm nature would produce **between 0.3/0.05ppm** of ozone, which gives us that nice, fresh smell that follows. Ozone (O₃) is a form of oxygen. It is a colorless gas with a distinctive odor and is a normal constituent of the earth's atmosphere. It is about 1.6 times heavier than air (density 2.144 g/l). Ozone is produced naturally from oxygen whenever sufficient ultraviolet (UV) radiation or electrical discharges occur, for example at high altitudes or by the action of lightning. Such natural occurrences are unlikely to produce hazardous concentrations at ground level. Most of the ozone found near ground level is formed by photochemical reactions involving oxides of nitrogen and hydrocarbons.

For areas of Continuous occupation –the **World Health Organization** – has determined that a continuous occupation desired level of ozone should be **0.05ppm**. This is significantly greater than that which is produced by the **HyGenikx** unit.

The **U.S. OSHA** [Occupational Safety Health Act] website cites several ACGIH (American Conference of Governmental Industrial Hygienists) guidelines for ozone in the workplace: • 0.2ppm for no more than 2 hours exposure • 0.1ppm for 8 hours per day exposure doing light work • **0.08ppm for 8 hours per day exposure doing moderate work 'Fresh Air'** – Ozone level **0.013ppm** After a **Thunderstorm** – Ozone levels measured between **0.3 and 0.05ppm HyGenikx units** – Sized for appropriate areas – Ozone levels 0.03ppm [Max 0.04ppm]. [Kiel Laboratories Germany. ISO Sensory / Odor Test. ISO Audited]. HyGenikx units, will create ozone enriched areas, less concentrated than after a thunderstorm. There has never been a known proven health issue from any HyGenikx UV devices that produces trace ozone. Other devices that use a ceramic disc and electrical charge system [Corona discharge] known as Ozone Generators can produce massive amounts of ozone also produce nitrous oxide another greenhouse gas. HyGenikx is **not** an ozone generator and the UV catalytic reaction does not produce these gases. Ozone produced by UV is often referred to as '**Clean Ozone**'.

What is considered an “occupied area?”

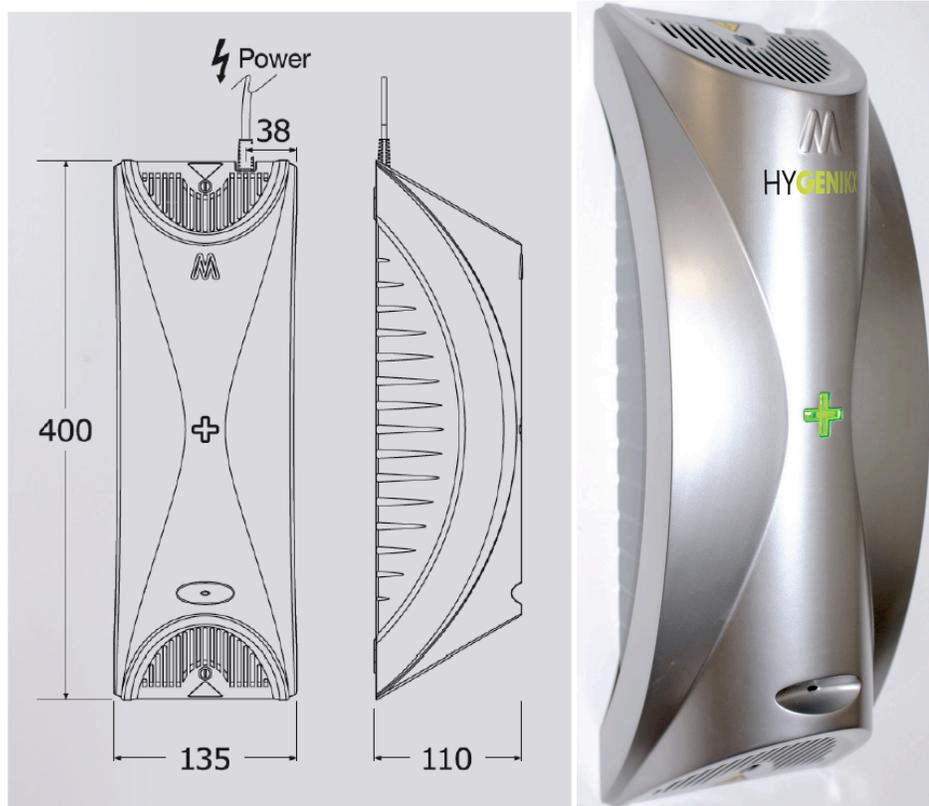
Any commercial space where air movement is present and people are within the area either for meetings (office for example) or general work (kitchens for example) also areas such as changing rooms, washrooms etc. The units fall under the threshold for Work exposure limits in line with WTO. All of the HyGenikx units, both single and dual wavelength, are designed for use within areas of continued occupation, except for the HGX-W/T-15-R (refuse area units with high Ozone output)

What exactly does the second wave in a dual lamp accomplish in addition to “flooding” the room faster?

The dual wavelength lamp can clean the air that has not gone through the HyGenikx unit, by the Plasma Quattro (created by the HyGenikx unit) hitting the RNA of the viruses / bacteria. Also, VOC (volatile organic compounds) is reduced more quickly (the removal of bad smells) A single wavelength lamp cleans in a similar way but does not continue to clean air that has not passed through the unit.

What are the dimensions of the HyGenikx unit?

15.75" (400 mm) high – 5.31" (135 mm) wide – 4.33" (110 mm) deep



What are the electrical requirements for a HyGenikx unit?

120 volt / single phase / 60 Hz.

The power consumption is between 8 and 13 Watt (depending on model)
The unit is supplied with a cord and plug, but can also be hard wired

Are all UL certified HyGenikx models approved for installation in "OCCUPIED AREAS"

YES

Why are there different HyGenikx unit variations and lamp options?

One size does not fit all. HyGenikx Technologies supply several product variations to ensure the best results in each environment and area size (a washroom presents a very different challenge to a cold storage area). Anything in a food environment must be “food safe” so units for these areas have a specialist food safe sheath for the lamp. Different units are set up for different environments and their anticipated bacteria levels and outputs vary. It is important to understand that units need to be suitably sized to ensure correct operation.

Are the single wave lamp models approved in California?

YES – The UL867 listing allows the HyGenikx unit to be sold in California

Is there a special approval number / symbol for California approval?

YES. This will be covered under a separate ETL listing.

Will the HyGenikx models have individual serial numbers?

YES – Each U.L. approved unit will have a name plate with the model number and serial number shown.

How many HyGenikx units will fit on a standard pallet for shipping?

110 HyGenikx units fit onto a sea freight pallet. 90 – 100 units fit onto an airfreight pallet.

Where do you install a HyGenikx unit?

NOTE: *Locating the unit close to extraction systems or open windows will vastly reduce performance as sanitizing air will be prevented from circulating correctly.* Always be conscious of movement of air throughout a room. Location close to incoming ventilation (air input) will assist air from

the unit in circulating throughout the environment. Avoid installing directly within a cooking zone where levels of heat and grease are elevated. In areas of lower air circulation, installing the unit as close as is practical to the strong odor, or contamination source, is recommended (i.e. next to food storage in cold store, above preparation areas in kitchen, next to urinals or toilets in a washroom or above locker areas in changing room). Air from the unit will disperse throughout, but this allows the key areas to be treated first.

How do you install a HyGenikx unit?

Units must always be vertically installed with the logo and cable at the top of the unit. The bottom of the unit should be at a minimum height of 6 feet above the floor. Air is circulated throughout the area via thermal convection. Incorrect installation will reduce performance. Please follow the enclosed instructions.

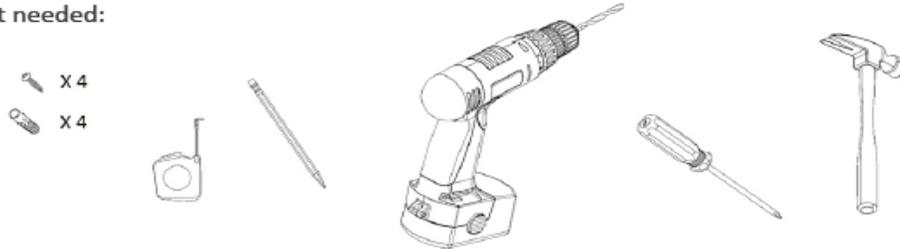
How often do the battery and lamp need to be replaced?

Lamp and battery should be replaced every 12 months. The unit has a “reminder system” built-in with a flashing indicator followed by an audible alarm to ensure this does not get miss

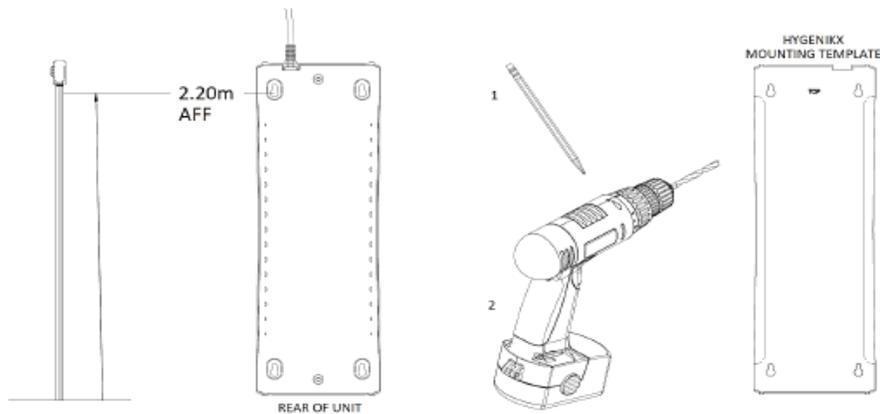
How easy is it to install a HyGenikx unit?

VERY!!

Equipment needed:

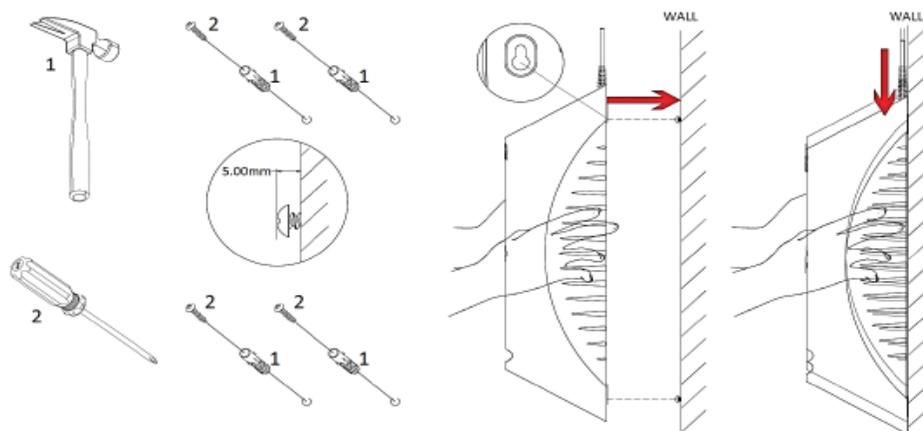


It is important to first identify the best location for the unit. *Ensure you have read Chapter 5 Location Advice.* Measure 2.2 metres AFFL. Mark and drill holes using template provided on packing box.



Insert wall plugs into drilled holes. Use hammer to fit wall plugs into position. Insert screws provided into wall plugs and screw into position, leaving 5mm to hang the HyGenikx unit.

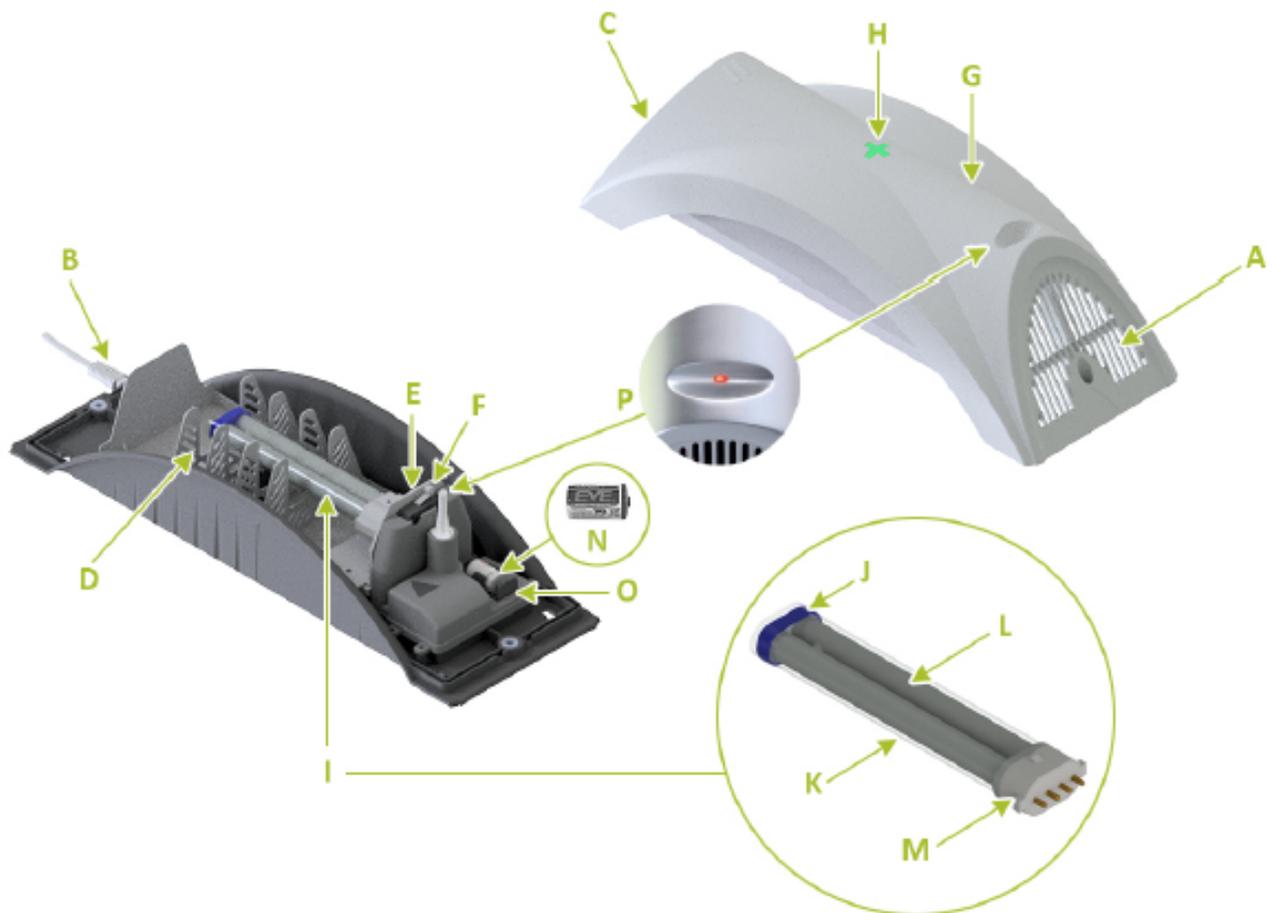
Align pockets on the back panel with screws and hang the HyGenikx unit into position as shown.



Connect the power cable to a suitably isolated socket or fused spur.

HyGenikx Component List

	HYGENIKX UNIT		LAMP		BATTERY
A	Air inlet vent	I	UV lamp	N	ER14250 battery
B	Power cable	J	Cap – colour coded	O	Battery compartment
C	Air outlet vent	K	Sheath (<i>food safe lamps only</i>)	P	LED battery warning light (<i>with audible alarm</i>)
D	Aluminium air diffuser plates	L	Quartz part of lamp		
E	UV lamp base	M	End terminal		
F	Safety microswitch				
G	Lid				
H	On/Off indicator light				



Technical Information – Single Wave Lamp models

Model numbers	HGX-W-20-S-SW-NA HGX-T-20-S-SW-NA	HGX-W-30-S-SW-NA HGX-T-30-S-SW-NA
Region	USA & Canada	
Air purifying technology	Nano-titanium dioxide photocatalytic oxidation + UV-C	
UV-C lamp tube	1 x 18w PLL composite tube	
UV-C intensity inside chamber	15000 $\mu\text{W}/\text{cm}^2$	
UV-C lamp tube life	Approx. 8000 hours	
Air residence time inside chamber	> 0.5 seconds	
Number of photocatalytic baseplates	4 pieces	
Noise level @ 1 metre	<39dB	
Air flow rate	20 - 30 m^3/hr	
Suggested coverage	20 m^3	30 m^3
Installation	Wall mount	
Housing material	Aluminium alloy – internal, polycarbonate front, ABS base	
Color	Front – White/Titanium, Back – Grey	
UV-C lamp tube model	Single wavelength 9W germicidal lamp	Single wavelength 13W germicidal lamp
BATTERY SPECIFICATIONS		
Mechline's models HGX-W/T... are powered by ER14250 battery in addition to Mains power supply		
Type	Lithium Thionyl Chloride	
Voltage	3.6V	
ELECTRICAL SPECIFICATIONS		
Power consumption	9-13W	
Input Voltage	120V	
Frequency	60Hz	
Input supply requirements	To be connected into suitably isolated fused spur taking power polarity into account	
Cordset	2 Core 18AWG polarity specific (L+N), 5 feet total length, UL E254458 NISPT-1	
Input protection	Microswitch actuated single pole polarity specific safety switch	
DIMENSIONS & WEIGHTS		
Dimensions	15.7" (L) X 5.3" (W) X 4.3" (D)	
Weight	4.2 Pounds	

Technical Information – Dual Wave Lamp models

	White finish models	Titanium finish models
Model numbers	HGX-W-10-S-NA HGX-W-20-S-NA HGX-W-30-S-NA HGX-W-05-O-NA (office model) HGX-W-25-O-NA (office model) HGX-W-15-R-NA (Refuse area)	HGX-W-10-S-NA HGX-W-20-S-NA HGX-W-30-S-NA HGX-W-05-O-NA (office model) HGX-W-25-O-NA (office model) HGX-W-15-R-NA (Refuse area)
Region	USA & Canada	
Air purifying technology	Nano-titanium dioxide photocatalytic oxidation + UV-C	
UV-C lamp tube	1 x 18w PLL composite tube	
UV-C intensity inside chamber	15000 μ W/cm ²	
UV-C lamp tube life	Approx. 8000 hours	
Air residence time inside chamber	> 0.5 seconds	
Number of photocatalytic baseplates	4 pieces	
Noise level @ 1 metre	<39dB	
Air flow rate	20 - 30 m ³ /hr	
Suggested coverage	10-30 M/SQ	10-30 M/SQ m ³
Installation	Wall mount	
Housing material	Aluminium alloy – internal, polycarbonate front, ABS base	
Color	Front – White/Titanium, Back – Grey	
UV-C lamp tube model	Dual Wavelength germicidal lamp 254Nm – 185Nm	Dual Wavelength germicidal lamp 254Nm – 185Nm
BATTERY SPECIFICATIONS		
Mechline's models HGX - W/T... are powered by ER14250 battery in addition to Mains power supply		
Type	Lithium Thionyl Chloride	
Voltage	3.6V	
ELECTRICAL SPECIFICATIONS		
Power consumption	9-13W	
Input Voltage	120V	
Frequency	60Hz	
Input supply requirements	To be connected into suitably isolated fused spur taking power polarity into account	
Cordset	2 Core 18AWG polarity specific (L+N), 5 feet total length, UL E254458 NISPT-1	
Input protection	Microswitch actuated single pole polarity specific safety switch	
DIMENSIONS & WEIGHTS		
Dimensions	15.7" (L) X 5.3" (W) X 4.3" (D)	
Weight	4.2 Pounds	

Additional HyGenikx Information



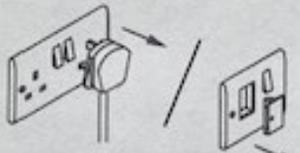
LAMP & BATTERY INSTRUCTIONS

HYGENIKX+
 by **MECHLINE**

BATTERY CHANGE

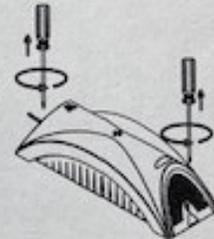
STEP 1

DISCONNECT UNIT FROM ELECTRICITY



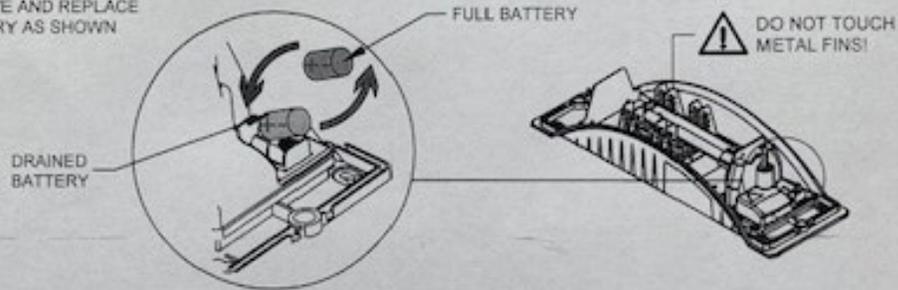
STEP 2

UNSCREW 2x FRONT COVER CAPTIVE SCREWS AND DETACH COVER



STEP 3

REMOVE AND REPLACE BATTERY AS SHOWN



STEP 4

REVERSE SEQUENCE TO REPLACE AND SECURE COVER

(LAMP instructions overleaf) ▶

- The lamps and battery must be replaced every year to ensure optimum performance of the system.
- FOOD area models are supplied with food safe lamps which have a shatter-proof protective sheath around the lamp. The protective sheath is an integral part of the lamp and must not be removed.
- Please dispose your old lamp and battery responsibly.
- For technical assistance contact: technical@mechline.com

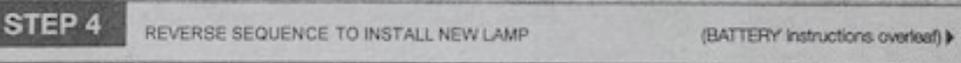
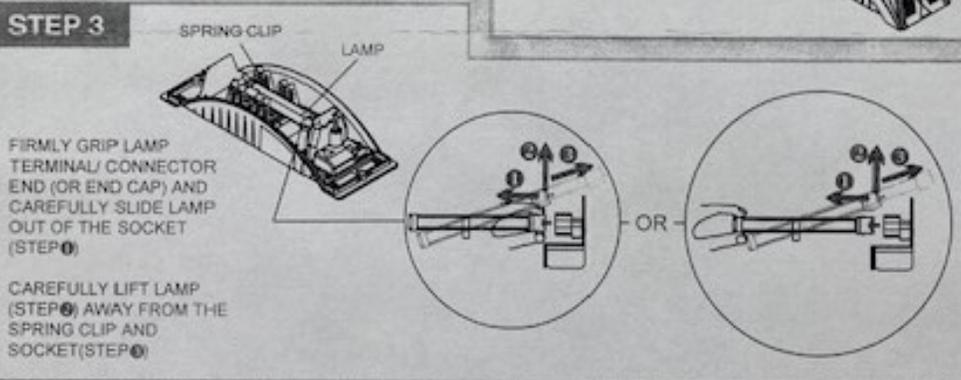
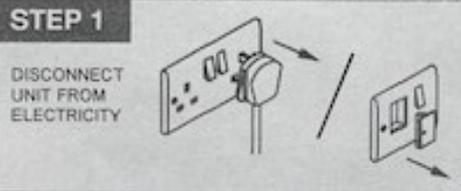
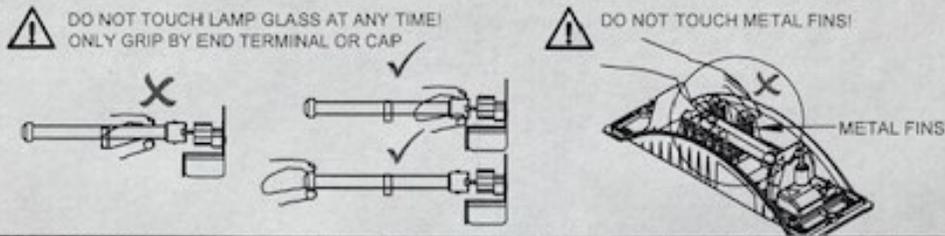


LAMP & BATTERY

INSTRUCTIONS

HYGENIKX+
 by **MECHLINE**

LAMP CHANGE



- The lamps and battery must be replaced every year to ensure optimum performance of the system.
- FOOD area models are supplied with food safe lamps which have a shatter-proof protective sheath around the lamp. The protective sheath is an integral part of the lamp and must not be removed.
- Please dispose your old lamp and battery responsibly.
- For technical assistance contact: technical@mechline.com



Intentionally Left Blank