



ULTRA-V

Sterilization by UV rays

Rev. 0 - 03/24



CHARACTERISTICS

La presence of micro-organisms potentially dangerous to health is one of the major dangers hidden in untreated water. Salmonella, fecal coliforms, Escherichia coli, legionella are just some examples of pathogens that can be present in polluted water.

The elimination of these agents is often the essential step to allow the safe use of water. Among the various techniques available for eliminating or reducing the microbial load from water, the use of ultraviolet lamps is undoubtedly one of the most effective and versatile.

Special lamps are capable of emitting ultraviolet rays (U.V. rays) which are selectively absorbed by the DNA of micro-organisms and cause their degeneration and death. The main advantage of U.V. rays is that it is a physical means of sterilization that does not alter the characteristics of the water in any way.

Ultraviolet rays constitute a region of the electromagnetic radiation spectrum of sunlight. For over a century it has been known that ultraviolet rays having specific wavelengths have a high germicidal power, thus destroying bacteria, yeasts, molds and viruses. Ultraviolet radiation acts directly on the genetic material of micro-organisms, thus interacting destructively with DNA. The absorption of ultraviolet rays by nucleic acids causes the rearrangement of genetic information, thus preventing cell replication. A cell unable to replicate is considered died. The maximum energy absorption by cellular DNA occurs at a wavelength of approximately 260 nm. This is why ultraviolet lamps are specifically designed to emit high energy at this wavelength.

U.V. sterilizers of the Ultra-V series consist of a stainless-steel sterilization chamber where the U.V. ray-emitting lamp is housed. Once the water enters the sterilizing chamber, it follows a path that allows it to obtain a dosage of U.V. rays sufficient to eliminate over 99.9% of the microbial load present.

The germicidal emission of the U.V. lamp gradually decreases over time and after 8000 hours they must be replaced.

Foreign bodies, suspended material and substances such as humic and fulvic acids reduce the efficiency of ultraviolet radiation and must be removed from the water before it enters the sterilizer.

Highly hard water can, over time, cause the formation of a layer of limestone, thus reducing the intensity of ultraviolet radiation and, therefore, decreasing its effectiveness.

For these reasons, it is necessary to protect the lamps using adequate pre-treatments: microfiltration at least 10 microns (to eliminate suspended material), iron removal filters (to



eliminate any iron present exceeding the concentration of 0.2 ppm) and softeners and dosing of polyphosphates (to reduce encrustation phenomena attributable to hardness of water).

Ultra-V sterilizers consist of a sterilization chamber preferably arranged vertically. All parts in contact with the fluid are made of AISI 304 stainless steel (optional in AISI 316) and very pure quartz glass. The chamber is crossed, longitudinally, by the quartz protection tube inside which the germicidal lamp is housed. The purpose of the protective quartz is to thermally isolate the lamp from the water, thus allowing the lamp to work in optimal conditions. The germicidal lamp has a peak emission at 254 nm, the lamp casing is designed to absorb the 180 nm wavelength preventing the formation of ozone.

The supply of the Ultra-V sterilizer consists of:

- 304 stainless steel sterilization chamber
- Extremely pure quartz glass for lamp protection
- germicidal lamp
- control panel for sterilizer operation

with indications of:

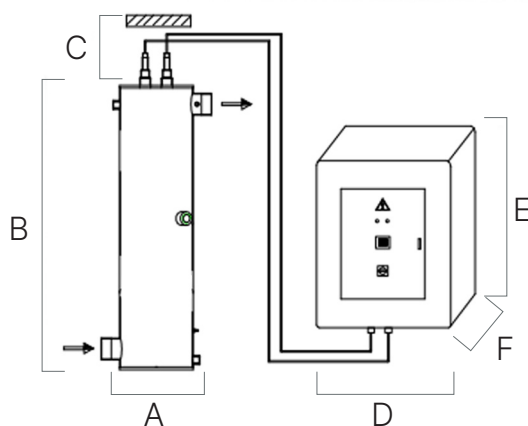
1. light signal on/off
2. system operating hour count signal
3. germicidal lamp operation light signal
4. 5m panel/sterilizer connection cable

## TECHNICAL DATA

Code		DB11001	DB11202	DB11304	DB11604	DB11806
Model		Ultra-V 10000	Ultra-V 20000	Ultra-V 30000	Ultra-V 40000	Ultra-V 60000
Maximum flow rate	m <sup>3</sup> /h	10	20	30	40	60
Inlet/outlet connections	pollici	2" M	2" 1/2 M	3" M	4" M	
Number of lamps and power	n° x W	1 x 87	2 x 87	3 x 87	4 x 87	6 x 87
UV lamp protection		Extremely pure quartz sheath				
Average lamp life	ore	8000				
Min.-max. working pressure	bar	0,002 - 7,0				
Sterilizer protection degree		IP65				
Supply unit protection degree		IP40				
Power supply	V/Hz	230 / 50				



## OVERALL DIMENSIONS



## STABILIZER DIMENSIONS

Code	A	B	Space required to manage lamp replacement C	Weight
	mm	mm	mm	Kg
DB11001	289	873	900	12
DB11202	335	871	900	20
DB11304	339	871	900	22
DB11604	330	871	900	24
DB11806	330	871	900	26

## CONTROL PANEL DIMENSIONS

Control panel for	D	E	F
	mm	mm	mm
Ultra-V 10000	280	380	180
Ultra-V 20000	400	500	200
Ultra-V 30000	400	500	200
Ultra-V 40000	400	600	220
Ultra-V 60000	400	600	220

5 m of cable supplied



## EQUIPMENT AND SUPPLY SPECIFICATIONS

The Ultra-V sterilizer is supplied COMPLETE with germicidal lamp and control panel, ready for installation instruction - maintenance manual in Italian (including declaration of conformity).

Shipping managed on pallets.



## OPTIONAL ACCESSORIES

### ATTENTION:

**The accessories must be ordered together with the sterilizer for the preparation of the control panel**

#### • DISPOSITIVO CONTROLLO IRRAGGIAMENTO LAMPADA UV

The device for controlling UV lamp irradiation is inserted into the central inlet of the sterilization chamber, removing the cap present.

The device must be ordered together with the sterilizer because the control panel must be set up for the signal.

The device allows you to monitor the life of the germicidal lamp or problems related to other worsening factors (highly hard water, ferrous water, etc.).

The control panel receives indication from the control device and emits a visual signal.

**COD. 32016360**

#### • UV CHAMBER TEMPERATURE CONTROL DEVICE

The device for controlling the internal temperature of the sterilizing chamber allows it to protect the UV lamp, via a probe and a drain solenoid valve. The device must be ordered together with the sterilizer;

The control panel receives indication from the temperature control device, acts on the drain valve, discharging the superheated water and restoring with cold water.

**COD. 32016364**



## REFERENCE STANDARDS

**Ministerial Decree No. 174/2004:** Regulation concerning materials and objects that can be used in fixed systems for the collection, treatment, supply and distribution of water intended for human consumption.

**Directive 2014/30/UE:** concerning the approximation of the laws of the Member States relating to electromagnetic compatibility.

**Directive 2014/35/UE:** concerning the approximation of the laws of the Member States relating to electrical equipment intended for use within certain voltage limits.



## MAINTENANCE

The operation of the system is completely automatic and maintenance is very low.

The only essential operations are the periodic replacement of the germicidal lamps and the cleaning of the protective quartz, as needed.

Under normal working conditions, the useful life of the lamps can be estimated between 7,000 and 9,000 hours.

It is recommended to replace the lamp at least annually. When replacing the lamp, it is recommended to also clean the protective quartz.



## INSTALLATION

Carry out the installation in compliance with local regulations in force. The installation must be carried out in hygienically suitable places and in compliance with the provisions set out in Decree of the Ministry of Economic Development No. 37 of 22 January 2008, including those relating to final testing and maintenance.

In any case, before carrying out the installation, consult the Assembly and Installation Manual supplied with the equipment.



## SPARE PARTS

Spare parts for the equipment are available on request in the dedicated price list.

## AVERAGE DELIVERY TIMES

2 weeks