

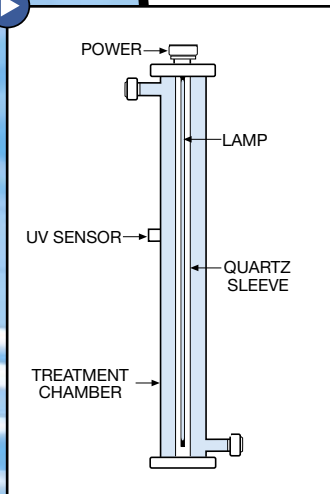
## STERIFLO CS Systems Ultra-Violet Water Sterilisers

The Steriflo CS series of UV disinfection units was developed to meet the requirement of industrial water consumers for a reliable, simple, high quality range of UV systems treating flows up to 10,000 L/hr.

**Quality, simplicity and performance are the three words which set the CS series apart from the competition.**



Steriflo CS  
Power Supply



### Quality...

- 316L stainless steel treatment chamber
- Electropolished hygienic finish
- Wet tested and run fully assembled prior to despatch
- MAF and USDA approved wetted components
- UV intensity meter on all models
- Minimum UV dose 40mJ/cm<sup>2</sup>

### Simplicity...

- Single lamp design
- Only one water seal per quartz sleeve
- Lamp change in 2 minutes
- CIP compatible

### Performance...

- Bioassay tested
- More than 700 installed since 1988
- Multiple units on major customer's sites
- Used by major food manufacturers, breweries, dairy factories, pharmaceutical manufacturers, soft drink bottlers and small municipal supplies
- Four models 3,000 - 10,000 L/hr capacity

### System Design

The single lamp design, using a quartz sleeve down the centre of a water chamber represents the most efficient use of UV that is possible.

The output of the lamp is continuously checked using a UV sensing system so variations in UV output due to lamp ageing, deposits on the quartz sleeve, water quality or temperature are immediately apparent. Low UV or lamp failure causes the changeover of alarm contacts plus both visible and audible alarms to be operated.

The lamps used in larger Steriflo CS systems are of considerably higher output than standard germicidal lamps which increases the treatment capacity possible with single UV lamps.

### Effectiveness

UV systems are recommended based on the flow rate to be treated (the peak, not a daily average), the water quality, existing pretreatment, incoming micro-organism counts and of course the required treated water quality. Achievement of specific kill levels of different micro-organisms is complicated by shielding by suspended matter, absorbance of UV by the water (measured as UV transmission) and by the differing susceptibilities of various micro-organisms to UV. In most applications Contamination Control will recommend a minimum UV dose of 40mJ/cm<sup>2</sup> although for very low levels of contamination or recirculating water loops lower doses may be applicable. The Amalgam lamp in the CS100 makes it suitable for treating hot water.

### Construction

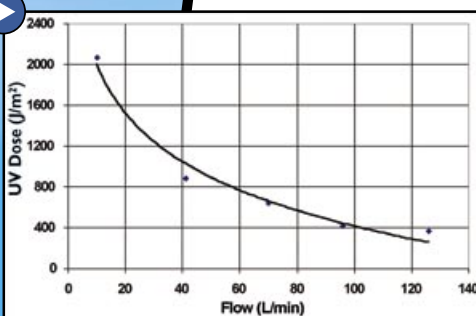
The Steriflo CS range is a family of similar designs based on meeting user requirements for reliable and simple operation. A single water seal is the only one touched during routine maintenance or cleaning. All wetted components are USDA listed and are suitable for food contact use.

Controls are in a separate wall mounted IP65 enclosure remote from the treatment chamber, usually made from GRP, with the option of stainless steel. The control enclosure contains the hours counter, UV meter and alarm features.

The cylindrical treatment chamber is made of electropolished 316L stainless steel, with the inlet at one end and the outlet at the other. Mounting brackets are attached for wall mounting, either horizontally or vertically. A wide range of connecting fittings and flanges are available.



Steriflo CS Treatment Chamber



CS80 Bioassay Graph

## STERIFLO CS Systems – Ultra-Violet Water Sterilisers

### Control

The CS series UV steriliser is designed to handle peak system flows. Lower flows receive increased UV doses but there are no adverse effects. The single lamp is monitored for correct operation by a UV sensor with a display on the panel. A 4-20 mA output from the sensor is an available option.

A lamp failure or low UV level causes an alarm, locally (both visible

and audible) and with a contact changeover for remote monitoring. Secondary earth leakage protection is also optional to shut the unit down in the event of water leaking into the lamp enclosure.

The unit can be left running during no flow periods, but can be turned off remotely to conserve power and lamp life. Rapid on/off switching should be avoided.

### Quartz Sleeves

Protecting the lamp from direct contact with the water is a tube (sleeve) of high purity quartz. Quartz is preferred to the fluoropolymer alternative which is claimed to be less likely to suffer from fouling (and reduction of UV output). In practice quartz tubes have many advantages over fluoropolymer designs and are used by all the world's major UV manufacturers.

Quartz has a very low absorbance of UV compared to fluoropolymer and makes efficient use of UV (multiple lamps are used with fluoropolymer designs even at low flows).

The quartz is easy to clean to its original state if fouled, fluoropolymer is not (USEPA finding).

In practice systems based on quartz sleeves can be operated at over 200psi. Standard fluoropolymer sleeves are rated at 30psi. Higher pressure

fluoropolymer sleeves are available but waste more UV as they have a thicker wall.

Quartz is unaffected by heat and chemicals, whereas in-line sanitation of fluoropolymer sleeve systems with hot water or steam is not practical.

Steriflo quartz based systems have a negligible head loss through them while fluoropolymer based units can impose unacceptable water flow restrictions due to head loss.

Fluoropolymer is flexible unlike quartz which is a glass-like material which can be broken if dropped. However quartz has a service life of many years while the fluoropolymer will degrade from exposure to UV (USEPA finding).

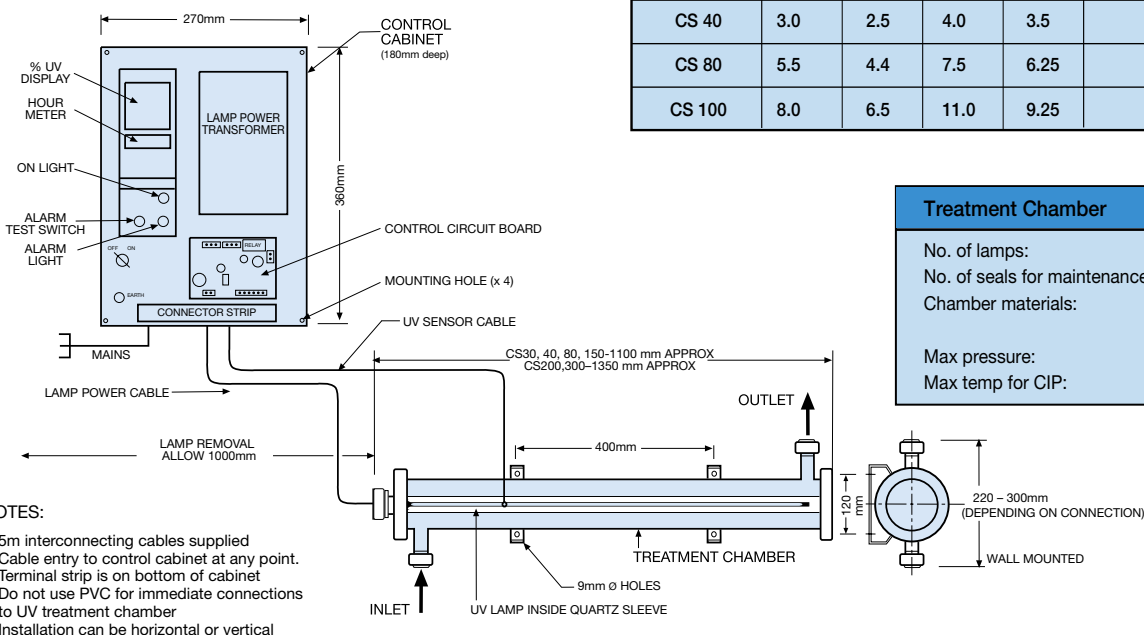
### Control Cabinet

- Voltage: 230 Volt/50Hz or 110/220/60Hz  
 IP Rating: IP65 (weatherproof)  
 Standard Features: Mains on indicator  
 Lamp on/off switch and indicator  
 Audible and visible alarm  
 Volt free alarm contacts  
 UV sensor and display  
 Options: 4-20mA UV sensor output  
 Skid mounting  
 Secondary earth leakage detection  
 Duty/standby systems  
 Sanitary sample valve

### Configuration

A variety of inlet and outlet connections are available (RJT, BSM, BSP thread, British or US flanges and Triclamp sanitary style) to order. The standard connection sizes are shown in the table but different sizes are available to order. The diagram below of a typical installation shows the usual arrangement for inlet, outlet and lamp removal (which can be at either end with any CS system). Installation of the treatment chamber can be vertical or horizontal.

| MODEL  | TREATMENT CAPACITY (m <sup>3</sup> /hr) |      |                      |      | POWER (Watts) | CONNECTION (typical mm) |
|--------|---|------|----------------------|------|---------------|-------------------------|
|        | 40mJ/cm <sup>2</sup>                    |      | 30mJ/cm <sup>2</sup> |      |               |                         |
|        | 100%                                    | 90%  | 100%                 | 90%  |               |                         |
| CS 30  | 2.0                                     | 1.75 | 2.75                 | 2.4  | 40            | 25                      |
| CS 40  | 3.0                                     | 2.5  | 4.0                  | 3.5  | 40            | 25/40                   |
| CS 80  | 5.5                                     | 4.4  | 7.5                  | 6.25 | 65            | 25/40                   |
| CS 100 | 8.0                                     | 6.5  | 11.0                 | 9.25 | 120           | 40/50                   |



- NOTES:
- 5m interconnecting cables supplied
  - Cable entry to control cabinet at any point. Terminal strip is on bottom of cabinet
  - Do not use PVC for immediate connections to UV treatment chamber
  - Installation can be horizontal or vertical

### Treatment Chamber

- No. of lamps: 1  
 No. of seals for maintenance: IP65 (weatherproof)  
 Chamber materials: 316L stainless steel, high priority quartz, silicon rubber, neoprene  
 Max pressure: 150psi/1030kPa  
 Max temp for CIP: 135°C

### Lamp Life

|          |             |
|----------|-------------|
| CS30/40: | 8,760 hours |
| CS80:    | 6,000 hours |
| CS100:   | 8,000 hours |