# TECHNICAL BULLETIN

## COSMEDICO TECHNICAL ADVISORY: Operating CosmoLux VHO and VHR Lamps

Cosmolux VHO and VHR®lamps (140w, 160w and 180w) operate with a different technology from conventional (100w) sunlamps. These high wattage lamps have high lamp currents. As a result, they are constructed using special mounts and cathodes (coils) capable of handling the high loadings.

These new electrodes feature an extended mount and a "cooling zone" that is located between the coil and the lamp end. Maintaining the correct temperature within the "cooling zone" is critical to maximizing
lamp output.

Cosmolux VHO and VHR® lamp output is maximized with the use of single lamp, choke-style CosmoPower® ballast operating on a common pre-heat circuit. CosmoPower® ballasts have been painstakingly matched to the specific operating characteristics of each lamp design; e.g. a 160w VHR®lamp is optimized when driven by a 160w CosmoPower®ballast.

The recommended starter for both the 140w and 160w lamps is the Cos 160; the 180w 2.0M lamps use the Cos 200. In rare instances the starter may "recycle" –that is,
the starter continues to perform the starting process after the lamp arc has been struck–
it may be necessary to either rotate the start-er to another lampholder or to replace it.

The high current requirements of 140w, 160w and 180w VHO and VHR® lamps combined with the shorter session time of beds/booths equipped with these lamps result in accellerated starter wear. As starters deteriorate, the stress on the oil of the lamp increases. This increases the rate of 'end darkening' –the process whereby coil mat-
erials are deposited on the bulb's interior wall.

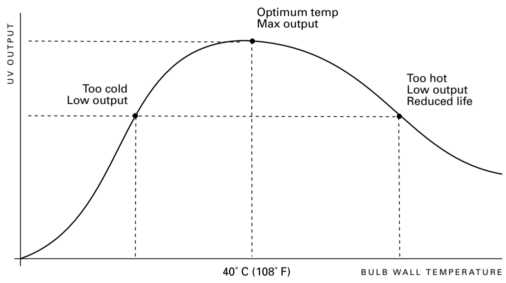
To minimize this condition, it is recommended that 'group replacement' of starters be done on a regular, scheduled basis –ideally with every lamp change. When tanning equipment is designed around Cosmedico VHO and/or VHR® lamps, special care should be made regarding the "cooling zone" located at the lamp ends. It is essential that the equipment design allow the lamp ends to operate at their optimum temperature. At one extreme, running the lamp too hot will reduce output and may cause the UV phosphor to age prematurely, but overcooling the lamp ends will not allow the lamp to ever reach its maximum output potential.

Ideally, lamp ends are best cooled by free convection and the linear surface of the lamp between the cathodes (within the range of discharge) should be cooled by fan. Over this surface, the cooling must be adequate enough to dissipate the heat produced by these high power lamps, yet not to the level where the cooling allows the mercury vapor to condense. As a benchmark, optimum lamp performance is obtained when the bulb wall temperature is maintained at 40˚ C.

Is your VHO or VHR® -based design properly cooling the lamps? There is a simple procedure to find out. First, turn on the equipment without forced cooling for several hours. The UV output will increase, then pass through a maximum, and finally decrease as the temperature continues to rise (fig. 1). The maximum output values achieved in this test will indicate the correct operating temperature. When the cooling system is then turned on, the UV output should rise as the bulb temperature decreases; it should stabilize at the previously recorded maximum output level. Thus, maximized lamp output indicates that the cooling system is properly tuned.

Another successful technique is to use a thermostatic switch to delay the start of the cooling fans. This allows VHO and VHR® lamps to come up to temperature and reach their maximum output as quickly as possible. Once the lamps arrive at their maximum output level, a thermostat energizes the cooling system and maintains proper operating temperature.

Due to the unique design of VHO and VHR® lamps, transportation and/or extended storage of the lamps may cause the mercury vapor to condense and migrate




to the lamp ends. When these lamps are energized the mercury may take some time to vaporize and enter the arc stream; the lamp will not operate at its full potential until sufficient mercury has been vaporized and distributed over the length of the arc.

We recommend that new lamps, recently transported lamps and lamps that have been non-operational for an extended period operate for 60 to 90 minutes before being used for tanning. In very rare cases there may be a combination of unfavorable factors requiring an even greater stabilization period. This period may extend to 24 hours until optimum mercury vapor pressure is attained. However, once this state is achieved and the unit is shut down, the mercury vapor will condense evenly along the bulb's length so that at next start, normal operation can be expected.

In rare cases a lamp may emit light in a wavy or oscillating manner when first started. The lighting industry's term for this phenomenon is called "barberpoling." It is caused by minor impurities in the lamp. A few on/off cycles will clear the contaminants and the lamp will function normally.

Finally, during normal operation the "cooling zones" of the VHO/VHR®lamps can be recognized as dark fields at lamp ends. These dark ends should not to be confused with the dark ends of lamps that are caused from the blackening of phosphors by the sputtering of materials from the lamp cathodes. These are instead the distinguishing feature of the "cooling zone" within the VHO/VHR® lamp.

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