



TECHNICAL NOTE

41 UV installations in swimming pool plant rooms

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UV INSTALLATIONS IN SWIMMING POOL PLANT ROOMS

This technical note on installation supplements the information in the PWTAG book *Swimming Pool Water: treatment and quality standards for pools and spas*.

Chemical dosing points

For all swimming pool applications, it is strongly recommended that disinfectant chemicals are dosed downstream of the UV chamber. This will reduce chemical reduction by the UV system and will prolong chamber life.

Location in relation to filters

Wherever possible, UV systems should be installed immediately after the filters. The effectiveness of UV treatment depends on water clarity and removal of the majority of suspended solids will reduce fouling of quartz sleeves and thimbles.

Lamp installation and orientation

All equipment and pipe work should be adequately supported when installed. The UV chamber should not be used to support the pipe work, as this may damage the chamber.

There should be a planned drainage route for the equipment to the plant room main drain. The UV chamber should be installed in such a way that it will not drain down inadvertently when water flow stops. If the installation of the chamber creates a risk of air entrapment, an air release valve should be fitted at the highest point of the chamber.

Chambers and panels should not be located under dripping pipework or chemical equipment. And chemicals that might corrode system components should be distant from UV equipment.

Medium-pressure UV lamp systems should be installed so that the lamps themselves are horizontal, regardless of the chamber orientation (many in-line chamber designs can be installed vertically).

Connecting pipework

The preferred material is stainless steel (either 304 or 316L grade) although straight pipe sections of uPVC may be connected direct onto the UV chamber, provided they are a minimum Class E (BS 3505). These materials should be used for a minimum straight section of 1,000mm if the pipe is 150mm (6in) or greater in diameter. If the pipe diameter is less than this, a minimum straight section of 500mm should be used. ABS should not be used. If plastic pipe is used, the same size connection should be used for the connecting pipework.

Elbows, bends, valves and seals

If the pipe diameter is 150mm or more, any elbows within 1,000mm of the UV chamber should be stainless steel. If the diameter is less than this, any elbows within 500mm of the UV chamber should be stainless steel.

If the pipe diameter is 150mm or more, any valves within 1,000 mm of the UV chamber should have a stainless steel disc (or other metal) and should not be coated with polymer. If the pipe diameter is less than 150mm, these specifications should apply to any valves within 500mm of the UV chamber.

Seals should be PTFE.

Strainers

Strainers should be downstream of the UV unit, to prevent any quartz shards entering the pool in the event of accidental breakage of the quartz sleeve/thimble. The strainer aperture should be no more than 1mm. The strainer should be accessible for cleaning, if necessary.

The preferred installation is to use either a basket or a top hat strainer within a spool piece, which can be removed for maintenance. If the UV chamber is mounted in a vertical section of pipe work, it is recommended that a point of access be provided to the pipe section below that chamber, in order to remove any quartz shards which have dropped through it.

Cables

If excess lengths of lamp and instrument cables interconnecting the UV chamber and its control panel are coiled, there may be issues. With instrument cables, this may introduce noise to the signal. In the case of the lamp cables, a voltage drop may result. If so, the manufacturer's advice should be sought.

Maintenance

There should be enough space for removal and replacement of lamps, quartz sleeves/thimbles and wiper components during routine servicing. The UV chamber location should not prevent safe maintenance of existing equipment. To allow continued pool operation during maintenance of the UV system, a bypass should be installed around the UV chamber.

It is good practice to install lockable ball valves on the drain and vent on the UV chamber, to aid maintenance.

When circulation is turned off for maintenance (or backwashing) the UV should be turned off at least 5 minutes before, to allow the heat to be dispersed and avoid the unit shutting down on overheat. (If auto backwash is installed, this procedure should also be automated.)