
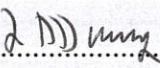


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## DOCUMENT APPROVAL

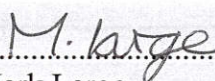
### Author's Signature:

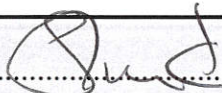
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| <b>Print Name</b> | James Drury   |             |             |
| <b>Title</b>      | Production Engineer   |             |             |

### Reviewer's Signature:

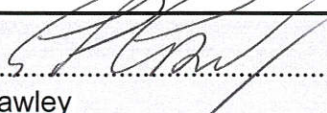
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## 1.0 PURPOSE

- 1.1. The purpose of the document is to define the SOP (Standard Operating Procedures) to be followed by ADVANEX EUROPE Ltd, in order to ensure that the Ultra Violet Filter used on the Purite system for the clean room is maintained in a controlled and consistent manner to assure compliance with ISO 14698 for the required class of operation.

## 2.0 SCOPE

- 2.1. The scope of this document covers the methods of working and maintenance of the Ultra Violet filtration system used in the clean room at Advanex Europe Ltd.

## 3.0 TERMS, DEFINITIONS & ABBREVIATIONS

- 3.1. ISO 14698 – The International Standard Organisation Specification for Bio contamination control for clean rooms.
- 3.2. UV – Ultra Violet, the type of light used to kill bacterial growth in the water system.
- 3.3. CR1 - Clean Room 1, the Upstairs clean room.
- 3.4. CR2 - Clean Room 2, the new Downstairs clean room.

## 4.0 HEALTH, SAFETY & ENVIRONMENTAL

- 4.1. Within the factory area safety footwear is mandatory.
- 4.2. Within the factory area the use of safety glasses is mandatory.
- 4.3. Ensure that clean cotton gloves are worn when handling the UV Blub to prevent any grease or dirt from hands being deposited on the bulb.

## 5.0 ASSOCIATED DOCUMENTS

- 5.1. Cleanroom - Activity Log (Document Number AEU00496).
- 5.2. Hazardous Waste (Document Number AEU00062).
- 5.3. Purite System Filter Replacement (Document Number AEU00497).


## 6.0 PROCEDURE

### 6.1. General Instructions.

**Note: There Are Different Types Of UV Filter Used For the Two Clean Rooms. This Procedure Details First Clean Room 1 (CR1) Then Clean Room 2 (CR2).**

### 6.2. Clean Room 1 (CR1).



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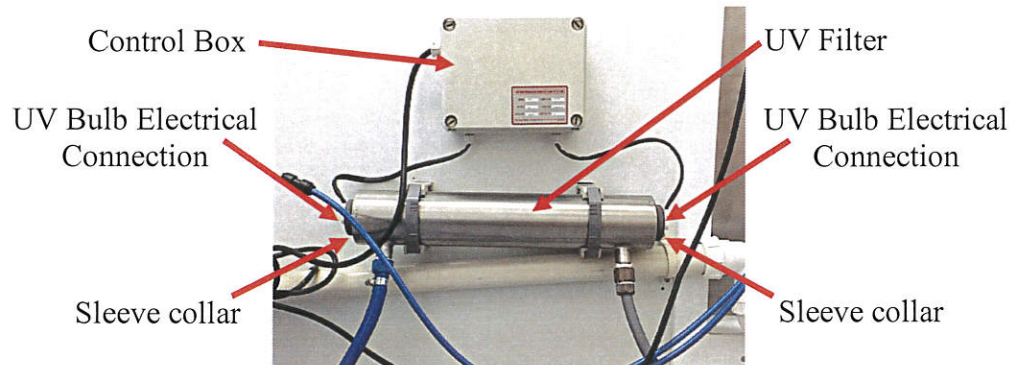


Figure 1: The UV Filter System for Clean Room 1 (CR1).

- 6.2.1. **Check the Operation of UV System.** Check the operation of the UV System by ensuring that the alarm is not activated.

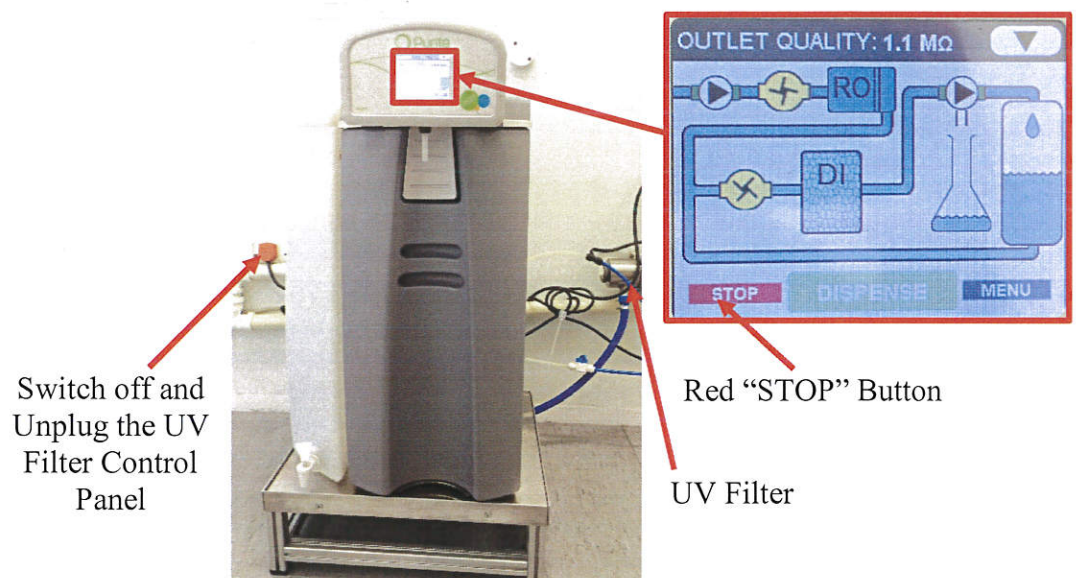



Figure 2: Purite System for CR1, shown with a zoomed in view of the control panel.

- 6.2.2. **Switch Off Filter Unit.** Switch off the filtration unit at the control panel by pressing the red "STOP" button, as identified in Figure 2:
- 6.2.3. **Isolate the Electrical Supply.** Switch off and un-plug the electrical supply for the UV filtration system, as shown in Figure 2:
- 6.2.4. **Let System Cool.** Allow the system at least ten minutes to cool down from operational temperatures.

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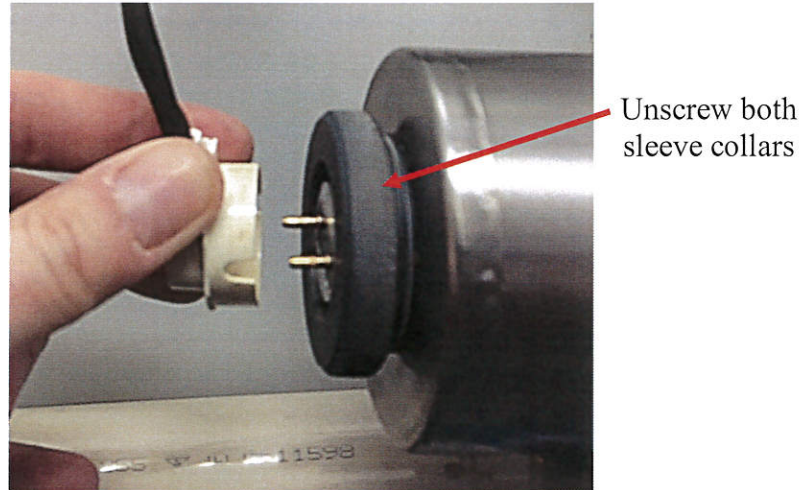


Figure 3: Removing the electrical connectors.

6.2.5. **Remove Electrical Connectors.** Remove the electrical connectors from each end of the UV filter unit by pulling the connectors off the bulb, for the second end the bulb will have to be held by a gloved hand to remove the connector.

6.2.6. **Remove the UV Bulb.** Whilst ensuring that clean cotton gloves are worn, slide the bulb out from the sleeve.

**Note: Ensure That Clean Cotton Gloves Are Worn When Handling The UV Bulb To Prevent Any Grease Or Dirt From Hands Being Deposited On The Bulb.**

6.2.7. **Removal of the Sleeve.**

6.2.7.1. **Place a Bucket Underneath the UV Lamp.** Place a bucket underneath the UV filter tube, to collect the water that will spill out of the filter tube whilst the sleeve is removed from the filter tube.

6.2.7.2. **Remove the Sleeve Assembly.** Twist the sleeve collars from both ends of the UV filter housing.


**Note: When The Sleeve Is Removed From The Filter Housing A Quantity Of Water Will Spill Out Of The Filter.**

6.2.7.3. **Replace the Sleeve.** Replace the sleeve with a new one.

6.2.7.4. **Refit the Sleeve.** Refit the sleeve assembly in a reversal of the removal instructions, ensuring that the sleeve is centred in the filter housing and tightened by hand ensuring that the sleeve is not over tightened as this will break the sleeve.

6.2.8. **Replace the UV Bulb, If Required.**



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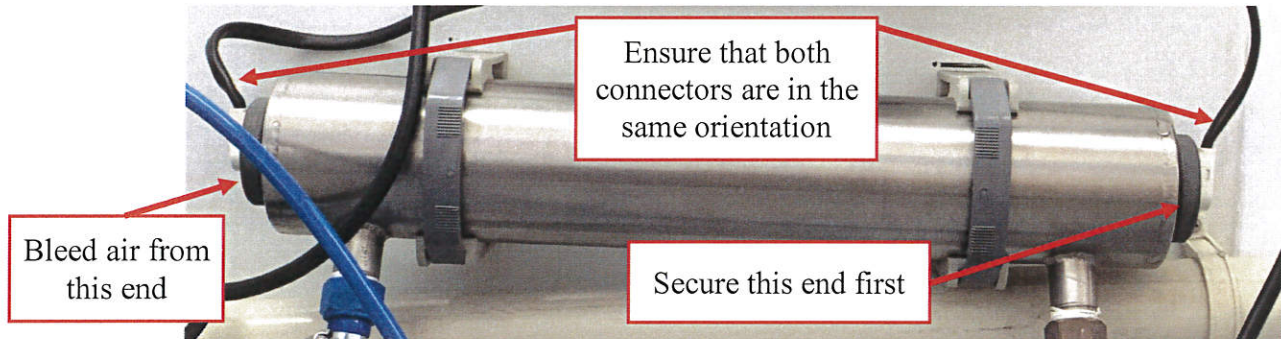


Figure 4: Reconnect the electrical connections.

6.2.9. **Reconnect the Electrical Connections.** Ensuring that both the electrical connections are replaced in the same orientation as each other, as indicated by both the connecting wires shown in Figure 4:

6.2.10. **Replace Filters.** Replace the filters as described in procedure Purite System Filter Replacement (Document Number AEU00497).

#### 6.2.11. Task Completion For Clean Room 1 (CR1).

6.2.11.1. **Bleed Air From System.** Bleed any trapped air from the system loosening the sleeve collars from the higher end of the sleeve until the water is to this level.

6.2.11.2. **Power Up System.** Reconnect the electrical supply removed in step 6.2.3 then switch on the control panel as described in step 6.2.2.

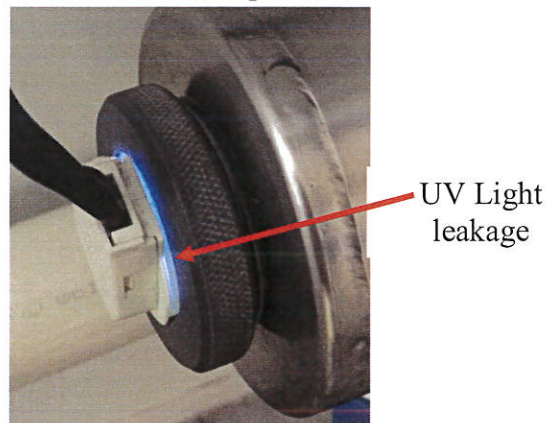



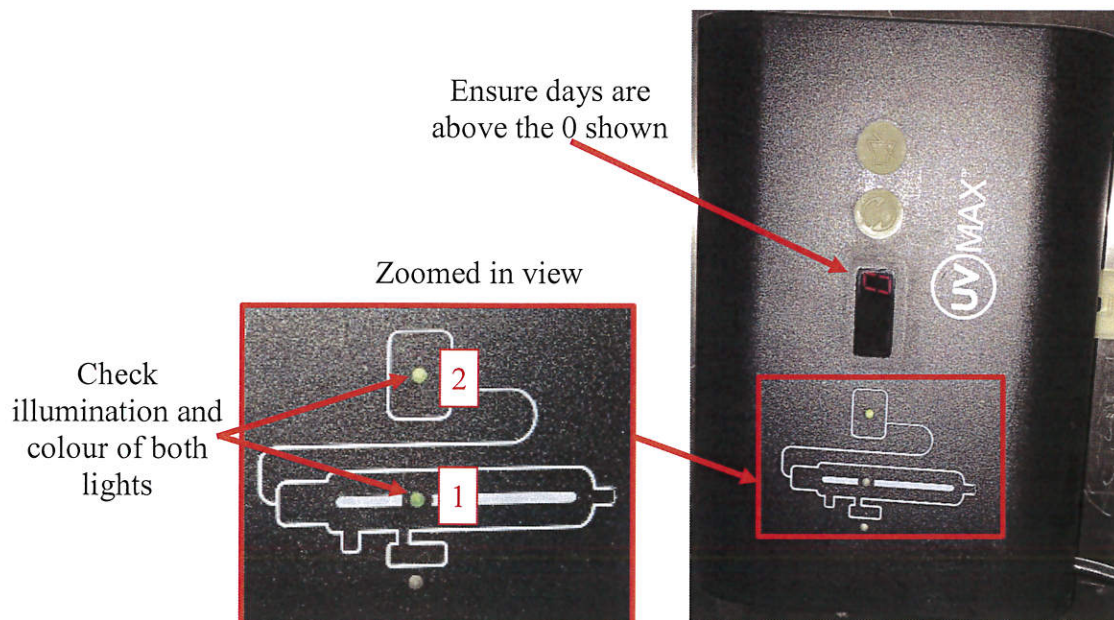
Figure 5: Ensuring the correct operation of the UV Bulb by looking for light leakage.

6.2.11.3. **Ensure Operation of the UV Bulb.** Once the UV System has been powered up, switch the lights off in the surrounding area and look around the ends of the UV Filter for UV light leakage, as shown in Figure 5:

6.2.11.4. **Record Activity.** Record on Clean Room - Activity Log (Document Number AEU00496).

#### 6.3. Clean Room 2 (CR2).

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| Indicator Number | Green light                     | Yellow light                                   | Flashing Red light  | Solid Red light                           |
|------------------|---------------------------------|--|---|---|
| 1                | Lamp operating normally         | Warning; lamp will require replacement shortly | Lamp disconnected; unplug system, reconnect lamp and plug-in system<br>Lamp failure; replace lamp | Lamp inactive due to power supply failure |
| 2                | Power supply operating normally | Air temperature around system is too warm      | Power supply failure; replace power supply  | Power supply inactive due to lamp failure |

Figure 6: Check the operation of the UV system, the location of which is shown in Figure 8:  
Zoomed in view showing the UV bulb working.

6.3.1. **Check the Operation of UV System.** Check the illumination of both status lights and ensure that they are both green in colour, as detailed in the table. The bulb life days counter is also to be checked to ensure that the serviceable days remaining is above the Zero (0) shown in the example in Figure 6:

6.3.2. **Procedure for Replacing the UV Lamp with the Sleeve Still in Place.**




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Figure 7: Filtration unit control panel.

6.3.2.1. **Switch Off Filter Unit.** Switch off the filtration unit at the control panel by pressing the red button, as identified in Figure 7:

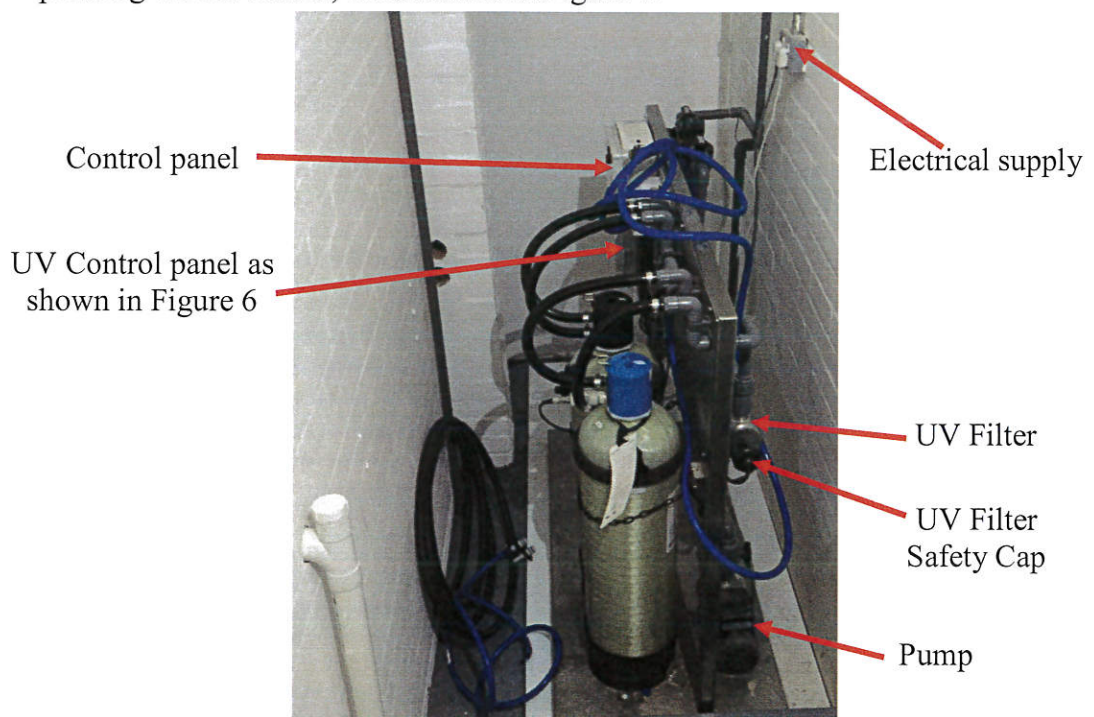


Figure 8: Location of filtration components.

6.3.2.2. **Isolate the Electrical Supply.** Un-plug the electrical supply for the filtration raft.


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Figure 9: Location of the isolation taps.

6.3.2.3. **Isolate the Water.** Isolate the water supply from both sides of the UV Lamp, using the isolation taps shown in Figure 9:

6.3.2.4. **Let System Cool.** Allow the system ten minutes to cool down from operational temperatures.

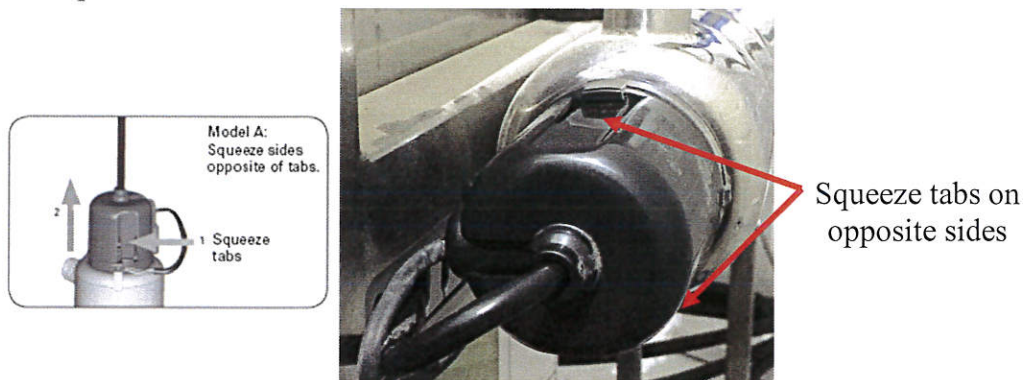



Figure 10: Remove the safety cap.

6.3.2.5. **Remove Safety Cap.** Squeeze both tabs on opposite sides of the safety cap then pull it away from the UV Filter to remove.



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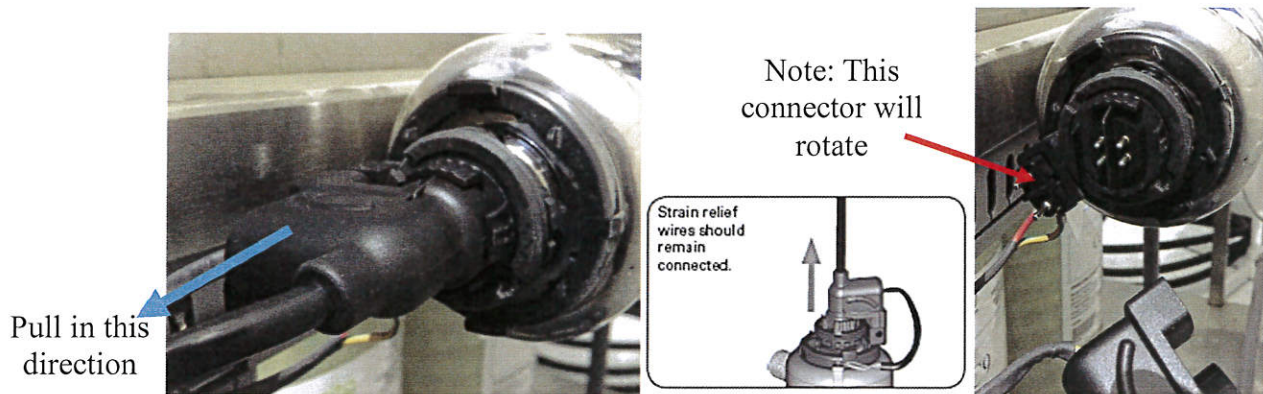


Figure 11: Remove the electrical connections.

- 6.3.2.6. **Remove Electrical Connector.** Remove the electrical connector by pulling the top cap, ensuring that the strain relief wires remain connected.

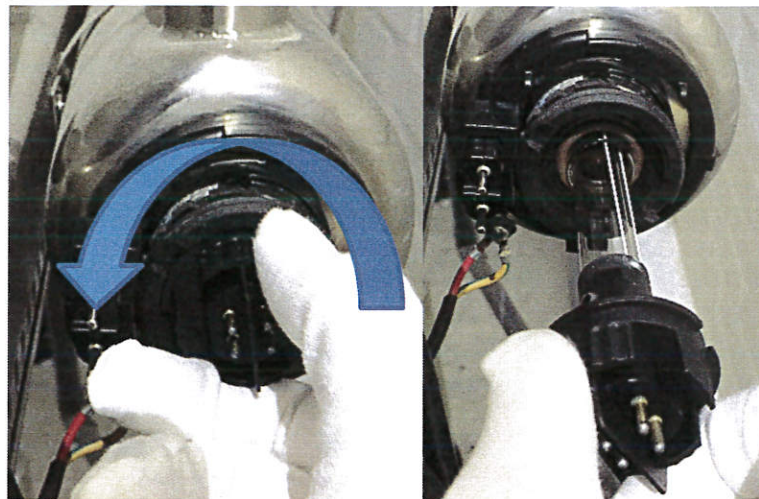



Figure 12: Remove the Lamp/ Sleeve Assembly.

- 6.3.2.7. **Remove the UV Bulb.** Twist the UV Bulb anti-clockwise and withdraw it from the filter housing.

**Note: Ensure That Clean Cotton Gloves Are Worn When Handling The UV Bulb To Prevent Any Grease Or Dirt From Hands Being Deposited On The Bulb.**

- 6.3.2.8. **Replace the UV Bulb, If Required.** If the bulb required replacing ensure that the old bulb is disposed of in accordance with procedure Hazardous Waste (Document Number AEU00062).
- 6.3.2.9. **Remove Sleeve, If Required.** If the sleeve requires removal for either cleaning or replacement, remove in accordance with step 6.3.3.
- 6.3.2.10. **Re-fitment is a Reverse of the Removal Tasks.** Reinstatement is a reversal of the disassembly tasks, from step 6.3.2.7 to 6.3.2.1.

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### 6.3.3. Removal of the Sleeve.

6.3.3.1. **Prerequisites.** Ensure that the steps 6.3.2.1 to 6.3.2.7 have been completed before starting this task.

6.3.3.2. **Place a Bucket Underneath UV Filter Housing.** Place a bucket or other collection tray below the UV Filter housing to prevent water spilling onto the pump.

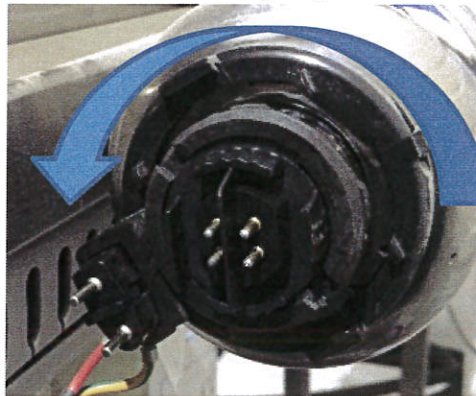


Figure 13: Removal of Sleeve, Note: The sleeve can be removed with or without the UV Bulb in place.

6.3.3.3. **Remove the Sleeve Assembly.** Twist the sleeve bolt anti-clockwise and withdraw it from the filter housing.

**Note: When The Sleeve Is Removed From The Filter Housing A Quantity Of Water Will Spill Out Of The Filter Ensure That This Does Not Spill Onto The Pump.**

6.3.3.4. **Replace the Sleeve.** Replace the sleeve with a new one.


6.3.3.5. **Refit the Sleeve.** Refit the sleeve assembly in a reversal of the removal instructions, ensuring that the sleeve is centred in the filter housing and it is not over tightened as this will break the sleeve.

6.3.3.6. **Refit UV Bulb.** Refit the UV Bulb and reassemble as described in step 6.3.2.8.

### 6.3.4. Replacement of the Sleeve.

6.3.4.1. **Prerequisites.** Ensure that the steps 6.3.2.1 to 6.3.2.9 have been completed before starting this task.



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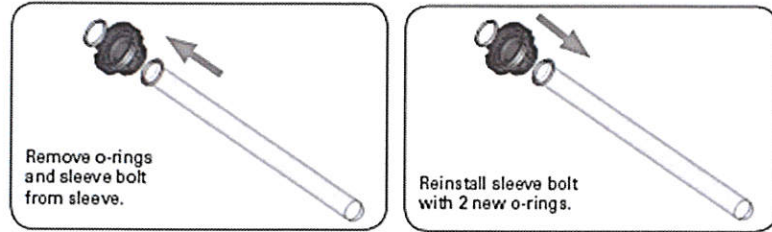


Figure 14: Replace the O-Rings.

6.3.4.2. **Replace the O-Rings from the Sleeve.** Remove Sleeve bolt from the sleeve and replace the two O-Rings included with the new sleeve.

6.3.4.3. **Replace the Sleeve.** Replace the sleeve into the filter housing as described in step 6.3.3.5.

### 6.3.5. Task Completion For Clean Room 2 (CR2).

6.3.5.1. **Reinstate the Water.** Open the water isolation taps as identified in Figure 9:

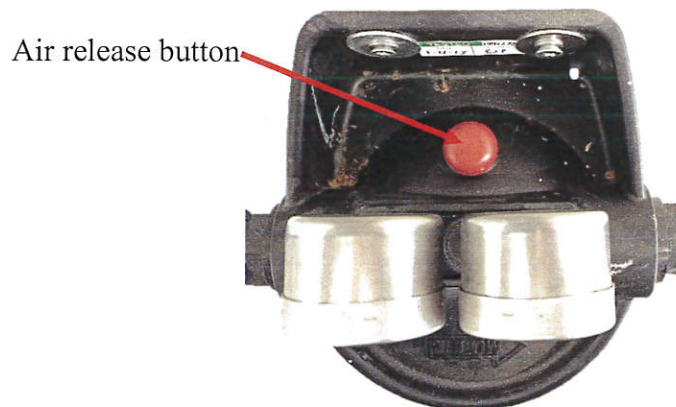



Figure 15: Bleed any trapped air.

6.3.5.2. **Bleed Air From System.** Bleed any trapped air from the system by pressing the Air release button identified in Figure 15:

6.3.5.3. **Power Up System.** Reconnect the electrical supply removed in step 6.3.2.2 and then switch on the control panel as described in step 6.3.2.1.

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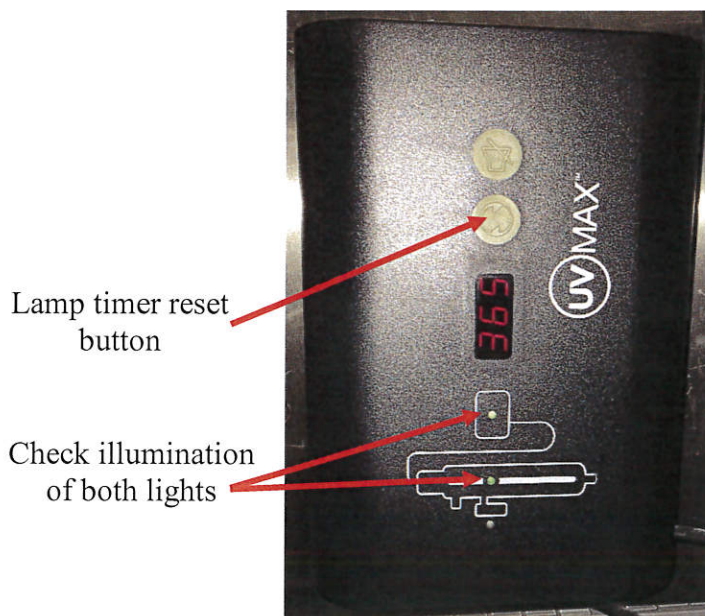


Figure 16: Reset the UV Lamp Life Counter, if new bulb was fitted. The controller is shown after the lamp life counter has been reset, Figure 6: is an example of the counter before it is reset.

- 6.3.5.4. **Reset the UV Lamp Life Counter, if New Bulb was Fitted.** If a new bulb was fitted in step 6.3.2.8 the bulb life counter will require resetting. Press and hold the Lamp Timer Rest button for five seconds, after the reset the display will read 365, as shown in Figure 16:
- 6.3.5.5. **Record Activity.** Record on Clean Room - Activity Log (Document Number AEU00496).