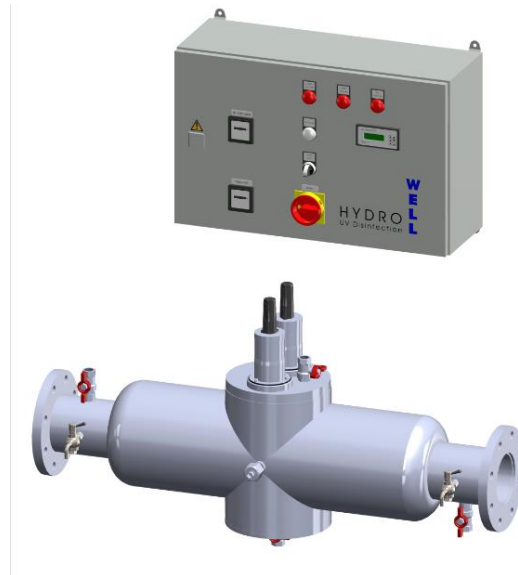


Operating and Maintenance Manual



HYDROWELL®

Type: SELECT

20, 30, 50, 70, 120, 150, 220

Select 20, 30 and 50 models are WRAS approved (70 and higher models are not WRAS approved but still available in the range)

Unit Number: _____

Sensor Number: _____

Customer: _____

Hydrotec (UK) Ltd
Hydrotec House
5 Manor Courtyard, Hughenden Avenue
High Wycombe, Bucks HP13 5RE
Tel: 01494 796040 Fax: 01494 796049
www.hydrotec.co.uk
email: services@hydrotec.co.uk



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- **Dimensional Drawing**
- **Wiring Diagrams**
- **Unit Pictures**
- **Operational Diary**
- **Safety Information**
- **Commissioning Sheet**

In case you were
wondering where your
lamps are...

We kept them when
carrying out the pre-
delivery inspection to
avoid damage during
transit and will bring them
along when we
commission the unit.

Please call us to arrange your free
commissioning within 6 months of shipping.

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1. Description

- Reactor vessel of stainless steel (grade: 316) with the UV intensity sensor.
- Connection at the waterside: pre-welded flange DN 100 - 200 (DIN 2576).
- Control box, wall mounting, including power supply and control of operation.

2. Installation and Operation

Horizontal installation of reactor vessel.

Water isolation valves should be fitted either side of the unit. If site require continuous water supply to the building during maintenance works and no down time is required, then a suitable by-pass should be fitted. By-pass should be suitably arranged to minimise dead legs.

Minimum of 500mm clearance above the unit is required for lamp exchange and cleaning purposes. If a UV unit is to be installed around a booster pump set, it must be sited on the outlet side of that pump. Some level of water flow through the UV chamber is required at all times. This is to ensure that the UV lamp doesn't overheat.

Electric connection:	220/240V, 50Hz
Max. operating pressure:	10 bar
Lamp type:	Ecolux 20N/30N/40N

Electrical connection and commissioning may only be carried out by authorised technicians!

Once the installation is complete, the UV lamp should be inserted in the lamp head socket, the lamp should be held by the ceramic collar not the glass due to risk of breaking (Any fingerprints on the lamp must be removed by an alcohol wetted tissue). Insert the UV lamp into the quartz sleeve ensuring that the insert shim is in position. The lamp head must be fixed to the removable quartz sleeve by inserting three stainless steel set screws (M5x12) and light flat gasket. The power supply cable which is fitted with a 7 pole plug and then screwed in the socket of the lamp head.

Note: The three screwed fixings have an asymmetrical angle spacing to guarantee the correct lamp position.

3. Starting the UV System

Put the main switch in "On" position. The LED's "lamp 1 failure" and "lamp 2 failure" will light. The UV unit is ready for operation.

The UV lamps are ignited by operating the rotary switch "Manual-0-Auto"

Auto: In this mode the UV lamps can be switched on/off via external potential-free contact. This method of operation is not recommended.
The Auto operation is disabled by bridging terminals 2-3 (set exworks)

0: UV lamps off

Manual: UV lamps on

The white LED "Operation" signals the correct operation of the UV lamps.

After ignition of the UV-lamps, the LED "Lamp fault" extinguishes shortly after and the corresponding potential-free alarm contact switches from fault to healthy. The display on the UV monitor shows the UV-intensity measured by the sensor. When the intensity goes above the alarm value, the corresponding potential-free alarm contact switches from fault to healthy

Note: Protect eyes and skin from UV light. Exposure to high intensity UV light may result in severe sunburn, painful conjunctivitis within a short period of time and may also cause permanent blindness.

The UV lamp should only be switched on only when inserted in the closed reactor vessel! This is to be carried out by a Hydrotec technician.
To arrange commissioning of the unit call Hydrotec (UK) Ltd

4. UV Monitor

The UV intensity is shown on the UV monitor. Below is a brief description:



The monitor is installed in the switchboard. All necessary parameters for the UV intensity control are shown here and a fault record done accordingly.

Display monitoring is as per the following sequence:

Main switch ON, selection switch Manual-0-Auto to position 0

Key functions

- | | | |
|---------------------|-------------------------|------------------------|
| - Enter | - “up” | - “down” |
| - enter config menu | - show software version | - show operation hours |
| - skip menu item | - raise value | - change option |
| - confirm paramter | - change option | - reduce value |

Note:

- To enter the config menu „enter“ has to be pressed longer than 2 seconds at status screen.
- If no key is pressed for about 20 seconds in config menu the screen will switch back to status screen and the setup changes will be lost.

Messages at monitor start up

- Monitor type and software version for about 6 s
- startup-countdown (can be defined in config menu) press „up“ to skip
- display of UV value and operating hours



messages and indication

Pre- and main alarm is shown

- Display with green backlight and yellow flashing (pre alarm)



70 % (pre alarm)

- Display with red backlight and yellow flashing (main alarm)



50 % (main alarm)

„max. lifetime – replace lamp“

- reason: lamp lifetime is exceeded
- indication: display is blinking red/yellow – relay indicate normal operation

meaning: replace the lamp and reset the „user counter“ (SERVICE only)

5. System Calibration

The UV intensity control must be adjusted to 110% after commissioning of the unit and when a lamp has been exchanged. This is done when the UV reactor has reached the thermal balance, achieved approximately 15-30 minutes after start of the UV lamp at nominal flowrate.

It is strongly recommended that this is carried out only by a qualified **Hydrotec technician**.

6. Faults During Operation of the UV Unit

The white “Operation” LED shows the operation of the UV unit. Additionally there is a potential-free contact that can be used by the operator. (Terminal 10-11-12, max. current 5A 230 V AC)

Lamp fault

The “Lamp failure” LED monitors a fault of any of the UV lamps. Additionally, there is a potential-free contact that can be used by the operator. (Terminal 13-14-15, max. current 5A 230 V AC)

The “Lamp 1 failure” or “Lamp 2 failure” etc. LED signals the failure of one or more UV lamps. The lamp number is corresponding to the lamp that has failed. Green LED = lamp on, red LED = lamp off.

The switchboard must be open for a visual check of the signal LED’s. Lamp heads and connections are marked.

One ballast controls 1 lamp:

Ballast 1	lamp 1
Ballast 2	lamp 2
Ballast 3	lamp 3
etc.	

If a UV lamp is faulty, it must be replaced.

UV fault

The “UV fault” LED indicates if the UV intensity falls below the pre-set value. Additionally, there is a potential-free contact that can be used by the operator. (Terminal 16-17-18; max. current 5A 230 V AC)

The LED, “UV fault” will illuminate when the intensity falls to 60%.

Possible reasons:

- Contamination on quartz sleeve
- Contamination on the UV sensor
- Overheating of unit by low or interrupted water flow
- Premature lamp ageing
- Premature ageing of UV sensor
- Air in the system (within the sensor range)
- Poor ignition of UV lamp (constant flickering even after ignition phase)

Steps:

- Cleaning
- Control of water flow
- Lamp change
- Exchange of UV sensor
- Ventilation of system
- Exchange of electronic ballast

7. Maintenance

ATTENTION!

The Operational Diary shall be completed insofar that all work, maintenance, service and alterations to the unit's operating parameters are recorded. It is also essential that the operating hours both (absolute and relative) be recorded whenever work is carried out on the unit.

Note:

The operation hours in absolute and relative range are recorded in the control box of the UV-unit.

Absolute: Total operation hours of plant, plant ready for operation connected to mains.
 Relative: Total operation period of plant without UV failure. The counter stops if main alarm is activated and if the unit operates with the UV intensity of less than 60%.

8. Cleaning the Quartz Sleeve and Sensor

Any formation of hardness depositing on the quartz sleeve and sensor lens must be removed from time to time. Cleaning is to be envisaged when the UV intensity decreases to about 70-60%.

Follow the procedure below for cleaning:

- Switch-off power to the UV unit.
- Shut the water valves to reactor vessel and open discharge and ventilation valve.
- Dismount the lamp heads by unscrewing the 3 set screws (M5 x 12).
- Remove light flat gasket.
- Remove insert shim.
- Remove the quartz sleeve by unscrewing 3 set screws (M6 x 16).
- Put the complete quartz sleeve insert in a tank filled with cleaning agent.
- When the cleaning agent has removed all external deposits, run the quartz sleeve under cold water to remove any traces of cleaner. The quartz sleeve can alternatively also be cleaned with a damp cloth containing a cleaning agent. When using any cleaner, protective gloves must be worn!
- Contaminations on the inside of the quartz sleeve must be removed by means of a normal glass cleaner or alcohol.
- Remove sensor cable from the UV sensor.
- Unscrew the UV sensor.
- Carefully clean the glass window covering the UV sensor.
- Refit the UV sensor using teflon tape and copper seal ring (if fitted).
- Install quartz sleeve: insert gaskets and lamp heads.
- Start plant again and ventilate the system to remove any air from the system.

Generally, it is possible to use any commercial acid cleaning agent. If in doubt please call Hydrotec (UK) Ltd

9. Lamp Replacement

The UV lamp is a high-quality, pre-burnt, Hg-low pressure lamp containing indium-amalgam. Life expectancy of the lamp is 8000 operating hours. After that period the UV radiation will decrease to approximately 60% of the standard original value.

Types to be used Lamp types Ecolux 20N/30N/40N – Pre-burnt (200hrs)

Preparation Switch-off unit, release lamp cover

Unlock Once the lamps cool down, remove UV lamps at lamp base and remove from the socket by moving slightly back and forth. Never press the sides of the quartz sleeve to avoid risk of damage and injury.

Cleaning Any fingerprints on the lamp glass must be removed with an alcohol soaked tissue. Clean any possible contamination from inside the quartz sleeve with a commercial glass cleaner and dry thoroughly.

Calibration (gauge) (See Para 5)

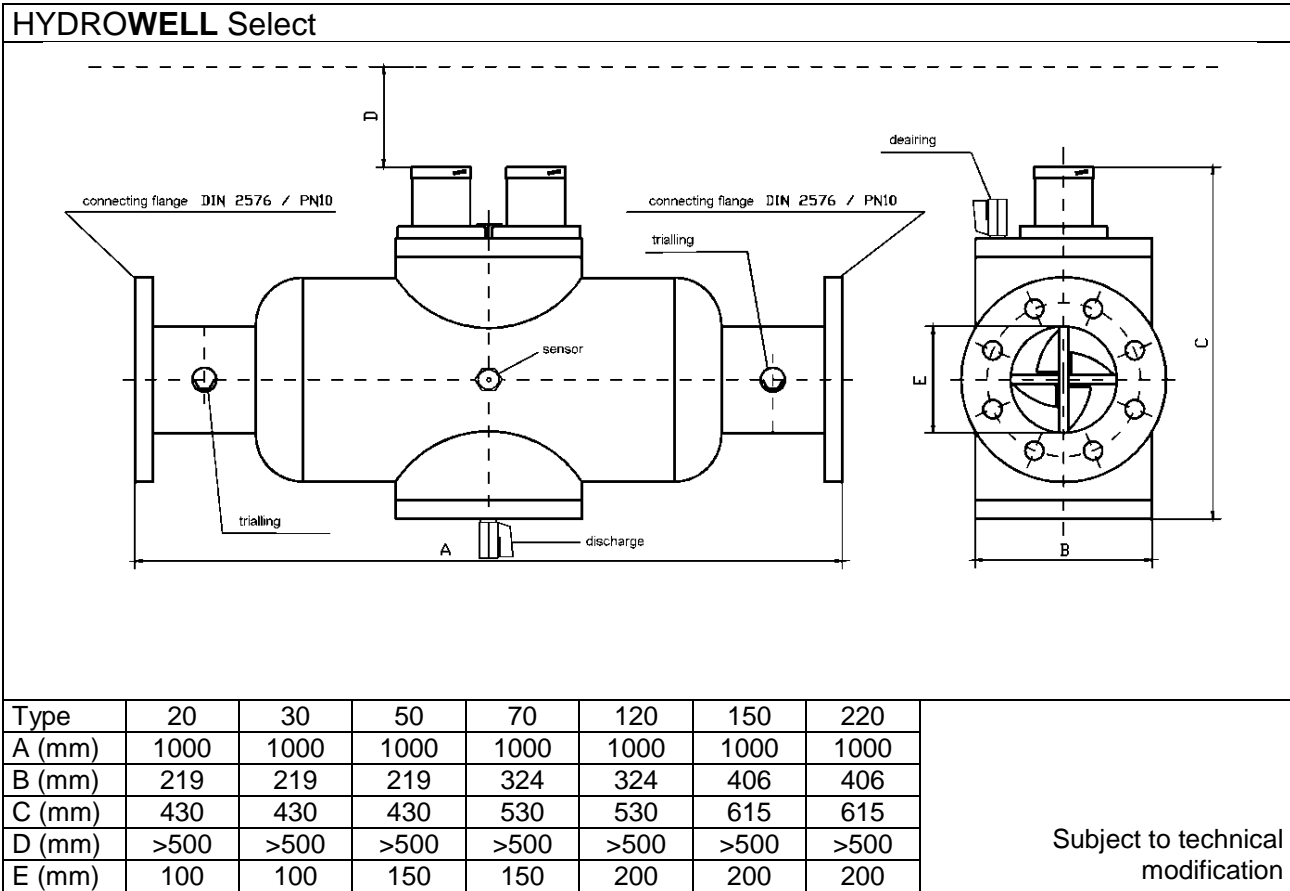
For servicing of unit contact Hydrotec (UK) Ltd

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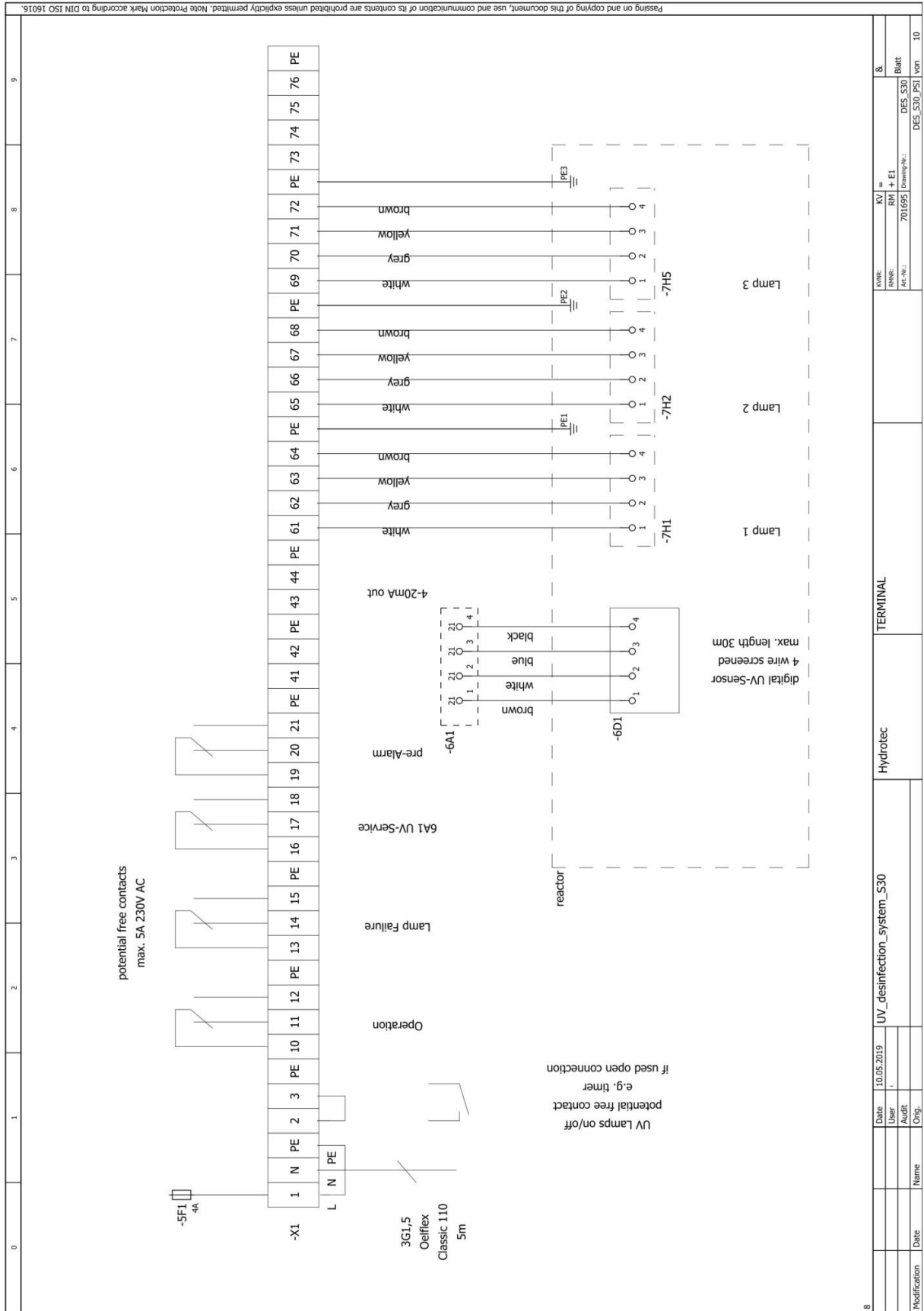
10. Technical Data

Type	20	30	50	70	120	150	220
WRAS approval	YES			NO			
Water temperature (°C)	5 - 50						
Ambient temperature (°C)	max. 40						
Reactor							
Connection E (mm)	100	100	150	150	200	200	200
Connection type	Flange (mm bore)						
Length A (mm)	1,000						
Depth B (mm)	219	219	219	324	324	406	406
Height C (mm)	430	430	430	530	530	615	615
Distance D (mm)	>500						
Weight (ca. kg)	33.7	39.5	48	60	87	90	100
Material	Stainless Steel 316						
MAX Operating pressure at 30°C water temperature	16.0 bar pressure at max. 30°C water temperature, WRAS approved to 10 bar			10 bar			
Pressure loss (bar)	<0.1						
Power Supply							
Electric connection	220/240V, 50Hz AC						
Power consumption (W)	120	180	240	300	400	520	780
Casing	Stainless steel casing with inspection glass						
Type of protection	IP 54						
UV Lamp							
Model	Mercury low pressure with amalgam						
Type	Ecolux 20N	Ecolux 20N	Ecolux 20N	Ecolux 30N	Ecolux 30N	Ecolux 40N	Ecolux 40N
Quantity	2	3	4	3	4	4	6
UV capacity new lamp (W)	17	17	17	27	27	38	38
After 8,000 operating hours (W)	10	10	10	16	16	23	23

11. Dimensional Drawing



12. Wiring Diagrams

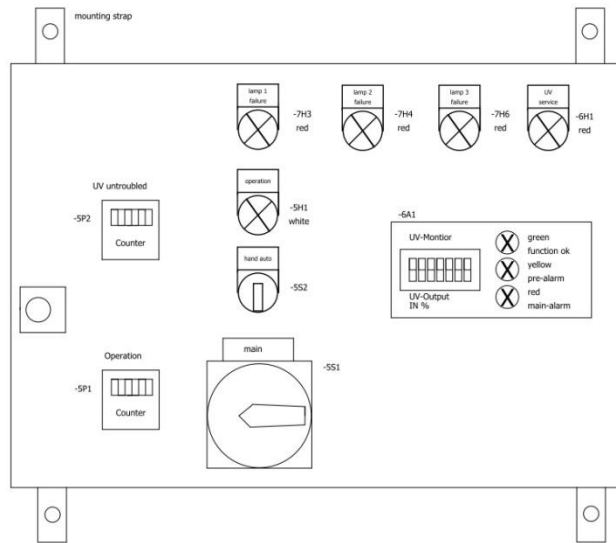


HYDROWELL Select 30

13. Unit Pictures

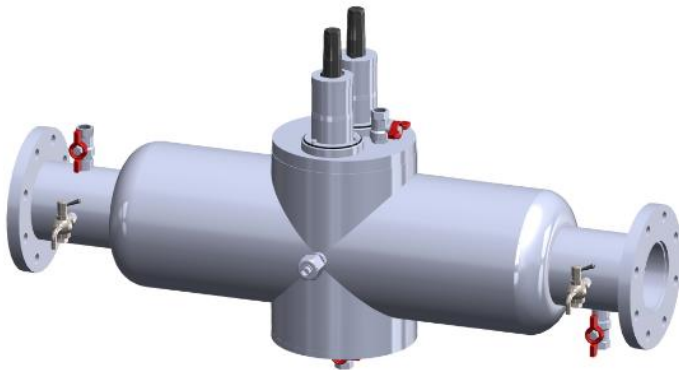
Control Box

Select 30/70



Reactor Vessels

HYDROWELL Select 20



HYDROWELL Select 220

NOTE!

A Hydrotec technician will make all connections between the control box and reactor and supply UV lamps when the system is commissioned. If the unit is to be connected to a BMS panel, this is the responsibility of the BMS installation technician. Connections to BMS can be found within this manual in the wiring diagram.

The control box is to be mounted within the reach of cables the unit was provided with! Under no circumstances it is allowed to modify the cables in any way!

SAFETY WARNING

Very high intensity Ultra Violet light. Please read the following user instructions:

1. Under no circumstance look at Ultra Violet light with the naked eye. Always wear the correctly rated protective UV glasses.
2. UV light can burn skin; protective clothing should be worn at all times.
3. Always switch the unit off at the control panel before removing lamp.
4. The UV should only be inspected by **trained** technician.
5. For sales or technical support please contact Hydrotec (UK) Ltd for more information.

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email: services@hydrotec.co.uk



This certifies that

HYDROTEC UK LTD

has had the undermentioned product examined, tested and found, when correctly installed, to comply with the requirements of the United Kingdom Water Supply (Water Fittings) Regulations and Scottish Water Byelaws.

**HYDROPUR SELECT20, HYDROPUR SELECT30, HYDROPUR SELECT50
UV DISINFECTION UNITS**

The certificate by itself is not evidence of a valid WRAS Approval. Confirmation of the current status of an approval must be obtained from the WRAS Directory (www.wras.co.uk/directory)

The product so mentioned will be valid until the end of:

July 2020

1507075

Certificate No.



Secretary



Chairman, Product Assessment Group

Please complete & Sign this form and fax to HYDROTEC to arrange commissioning of your HYDROWELL Water Disinfection Unit on FAX: 01494 796 049 or Email: services@hydrotec.co.uk

Name		Site Contact	
Company		Company	
Address		Site Address	
Full Postcode		Full Postcode	
Tel		Site Tel	
Fax		Installation Area	

Tick to confirm:

- The HydroWELL has been installed as per our Installation Instructions.
- All parts are on site as per packing checklist.
- The control box has been secured to the wall.
- Electrical supply (fused spur outlet 240V AC 50Hz 5AMP) within 1.5 metres of control box has been provided and connected. **(DO NOT TURN THE POWER ON).**
- Isolation valves have been installed either side of the UV vessel.
- Compact** models only: The UV vessel has been installed in horizontal pipework with the reactor vessel vertically (drain cock down).
- Standard** models only: The UV vessel has been installed in vertical pipework with the reactor vessel horizontally (drain cock down).
- Select** models only: The UV vessel has been installed in horizontal pipework with the reactor vessel horizontally (drain cock down).
- There is a minimum of 500mm free servicing clearance measured from the end of the lamp head(s).
- The UV vessel is plumbed in and water to inlet valve is provided.
- The building has been cleaned / sterilised to BS8558 standard.
- On-site parking will be available.

By signing this form we agree to the following: Should any of the above not have been carried out at the time of the agreed visit; a further inspection will be required prior to a Commissioning Certificate being issued. This will be carried out upon the issue of a Purchase Order for £500.00. Less than 48 hours cancellation notice will also incur a £350.00 charge.

Please do not hesitate to call us should you be having difficulties with the completion of this form.

Required commissioning date ___ / ___ / _____. **Commissioning is normally carried out within 15 working days.**

Signed..... **Print Name**..... **Date**.....

For Office Use Only:

Job No:		Model:	
Serial No:		No of Units:	
Ship Date:		Remarks:	
Hydrotec Engineers Comments:			

A Member of the Cascade Water Engineering Group
Registered No. 2738074. Registered Office Hydrotec House, 5 Manor Courtyard, Hughenden Avenue, High Wycombe, Bucks HP13 5RE