

# ACTIVATED CARBON Series Filter

## Installation Operation Maintenance Manual

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## ACTIVATED CARBON Filter WS1TC Series Valve

### Models

CA1044-3B	CA1248-3B	CA1354-3B
CA1465-3B	CA1665-3B	CA1865-3B
CA2160-3B	CA2469-3B	

# ACTIVATED CARBON Series Filter

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### 1.0 UNPACKING AND PARTS LIST

#### 1.1 UNPACKING NOTES

The unpacking of the Filter is quite straightforward, and there are no 'hidden' items. It is advisable to keep the packages sealed until such time as they are used, to prevent dust or water entry.

#### 1.2 BASIC PARTS LIST

1. VALVE (c/w flow controllers on outlet and drain)
2. Clack MANUAL
3. INSTRUCTIONS
4. VESSEL (c/w riser and distribution system)
5. 4" - 2 1/2" REDUCER (if required)
6. ACTIVATED CARBON MEDIA (qty as specified)
7. Gravel Media (qty as specified)

#### 1.3 MISSING OR DAMAGED GOODS

Immediately on receipt of the goods, it is advisable to check that all items ordered have been received. If you have any doubt that goods have been supplied as requested, please contact your supplier immediately. If any items are missing or damaged, the carrier and your supplier must be notified within 2 days of receipt if a claim is to be made.

### 2.0 TEMPORARY STORAGE

If installation is not to start immediately after delivery, the equipment should be stored in a clean dry area, where it will not be damaged, or be subjected to temperatures below freezing.

### 3.0 GENERAL NOTES

These instructions cover the ACTIVATED CARBON Range of filters, which includes model numbers from CA 1054-3B to CA249-3B

It is recommended that these instructions are read thoroughly before commencing any work on the unit, particularly if you have no previous experience of installing and using a filter.

#### 3.1 *ACTIVATED CARBON-R Media*

ACTIVATED CARBON is a natural media used for chlorine, odour and organic/colour removal

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ACTIVATED CARBON filter media requires backwashing with the raw water to clear the bed. The operating parameters for ACTIVATED CARBON make it suitable for a number of water types.

## **3.2 System Management**

In order to remove accumulated deposits from the filter bed, the water flow through the filter is reversed (backwashed). Water is run to drain at a high rate to separate the filter media from the deposits. The control valve completes the backwash cycle automatically at the intervals and times set during installation. Backwash and fast rinse times are set for 20 minutes per cycle but can be altered to suit individual requirements.

Due to the density of ACTIVATED CARBON media a high backwash flow is required to ensure a good lift of the bed and to allow all accumulated debris to be removed. All filter valves have the option of an additional volt free microswitch, which can be used to initiate a regen pump etc.

## **4.0 REGENERATION/BACKWASH**

### **4.1 The Backwash Process**

The backwash process consists of two stages:-

**Backwash** - Water flows upwards through the media bed, and out to a drain. As it does so it separates the deposits from the filter media and cleans off any particles of dirt or pipework corrosion products, which may have accumulated during the service cycle.

**Fast Rinse** - This follows the backwash cycle and entails rinsing away any residual deposits from the media and re-packing the media bed. This is carried out down flow with water flowing through the media in the direction of service.

### **4.2 TIME CLOCK CONTROL OF REGENERATION INITIATION**

Most filter application systems are supplied with a time clock configuration valve, which initiate regeneration at a pre-set time (usually 2:00 AM) after a pre-set number of days. The frequency of regenerations is fully adjustable, but a minimum of once every 3 days is recommended.

## **5.0 PRE-INSTALLATION CHECKS**

### **5.1 MECHANICAL**

#### **5.1.1 Foundation/Drainage**

The filter will not require any special foundations, provided that a firm, level area, which is capable of supporting the working weight, is available. (See

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Engineering Data, Section 11.2)

Unwanted water from the backwash process must flow to drain, and so an open drain or gully, capable of passing the necessary flow is required (see Process and Operating Data, 11.1, for relevant flows). The total flow of water to drain depends on site conditions, but will be at least the same as the service flow. Preferably the drain should be level but no higher than 500mm above the filter valve.

### 5.1.2 Operating Space

The space occupied by the filter can be found in the Engineering Data (Section 11.2).

Access will be required to carry out adjustments or maintenance on the equipment. It is therefore recommended that a minimum of 500mm clearance be allowed around the unit for this purpose.

### 5.1.3 Incoming Water

The raw water to be fed to the filter must comply with the following:-

1. Temperature = 3 -45°C (35- 110°F)
2. No Oil or Polyphosphates
3. Backwash flow rate requires a pressure of 2 bar

### 5.1.4 Pipework

Pipework to be connected to the filter should not have an excessive amount of deposits. Piping that is heavily built up with scale (or Iron deposits) should be replaced.

Make sure that the pipework can be connected to the filter in such a way as to impose no stresses on the control valve, and that it is properly aligned and supported.

A system for the complete by-passing and isolation of the filter should be installed.

### 5.1.5 Water Supply Company Requirements

During backwash the accumulated debris and oxidised iron and manganese is flushed to drain. Please contact your local Water Authority for advice on effluent issues if concerned with flow to drain.

## 5.2 ELECTRICAL

All filter valves are supplied as 12v complete with a transformer for 240v. A continuous supply of 240v, 5 VA is required which should be provided by an uninterrupted mains supply, which is separately 1 Amp fused, and does not have any additional switch.

A plug is provided with this filter, the cable should be connected to fused spur outlet. However if that is not possible then a plug should be fitted to the cable with a 1 amp fuse. The socket used should be unswitched to prevent the filter from being inadvertently turned off.

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## 6.0 ASSEMBLY/INSTALLATION

### 6.1 MECHANICAL

Check all the items against the parts list and shipping documents, and ensure you have them all before starting work. In addition to the filter you will require installation materials and basic tools, (i.e., spanners, screwdrivers etc., and PTFE tape)

#### 6.1.1 Pipework

Pipework can be constructed from any normally acceptable material (Copper, Galvanised, Plastic), provided it is properly supported and aligned. Ensure that the pipe is sufficiently large to accommodate the flow of water required, making due allowance for the pressure drop between the filter and the point of discharge of treated water.

***NOTE: IF BRAZED OR SOLDERED FITTINGS ARE TO BE USED, THE PIPE WORK MUST BE DISCONNECTED FROM THE VALVE DURING HEATING AND COOLING. EXCESS HEAT CAN CAUSE PERMANENT DAMAGE TO SOME OF THE VALVE COMPONENTS.***

#### 6.1.2 Drains and overflow connections

The drain connection from the backwash valves is a 3/4" or 1" BSPM thread. Flexible tube should be run from this spigot to a drain capable of taking the maximum flow in regeneration (see Section 11.2), and leaving a similar gap above the drain edge. The drain must not be higher than 500mm above the control valve and preferably should have an air break at the same height as the control valve.

### 6.2 ASSEMBLY

**Refer to the installation diagrams in Section 13 and note the direction of flow through the system.**

Ensure the installation site is clear and level.

Ensure that the piping system in the building transfers the treated water into a vented header tank to feed any hot water systems.

If possible, place the filter vessel into its final location before filling. Check that the riser tube has the cap in place before commencing filling.

Using a hose 1/3 fill the vessel with water. This is to prevent damage to the bottom distributor when pouring in the media.

Using a funnel slowly pour in the support gravel. Next, slowly pour in the ACTIVATED CARBON media, taking care not to spill any on the floor and that the riser remains central in the vessel during filling.

After pouring in all of the filter media, the vessel should be, at most, 50% full. This is to allow rising space for the media during the backwashing cycle. Once

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the vessel is filled, immediately sweep up any spilled filter media.

Remove the cap from the riser tube and brush any debris out of the threads in the neck of the filter vessel.

Unpack the valve and reducer (if used). Screw the reducer into the filter vessel, then slip the valve down onto the distributor tube. No top distributor is used on filter valves to allow the maximum amount of debris to be backwashed off the media.

Screw the valve into the filter vessel, taking extreme care not to cross the threads. As the valve is being run into the vessel excessive force should not be required. Finally tighten to approximately 20ft.lbs torque.

Adjust the position of the filter vessel to line up with the pipework connections, not the position of the valve on the vessel.

Connect the inlet and outlet pipework to the valve using flexible connections or plastic high pressure piping. Flexible pipework is essential to prevent stress on the vessel as it cycles during service since it will expand and contract longitudinally.

Connect the drain line to the outlet of the drain line flow controller on the valve.

**Ensure** that there is an air break in the drain at the same height as the valve to prevent negative pressure on the vessel.

Connect the power supply to the valve and the unit is now ready for commissionin

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### 7.0 COMMISSIONING

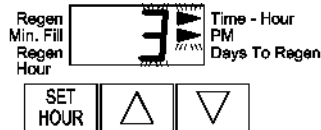
#### 7.1 INTRODUCTION

It is recommended that the commissioning of the plant is undertaken by a trained service engineer, who will be able to put the plant into service quickly, and most efficiently. However, if the services of an experienced engineer are not available, following the steps outlined below will result in the system being properly commissioned.

#### 7.2 Setting the Time of Day



Press Set Hour



set the clock to the Closest Hour by Using the Up and Down buttons. An arrow points to PM after 12. after Power failure the time of day will need to be reset. Press SET HOUR to exit

The filter regeneration cycles have been factory programmed.

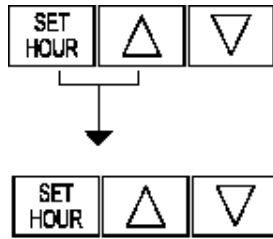
The time of day for regeneration to take place has been entered as 2.00 AM and this can be altered depending on site requirements.

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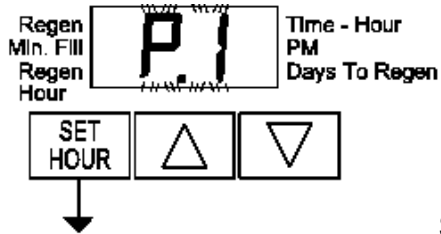
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### 7.3 Regeneration Programming

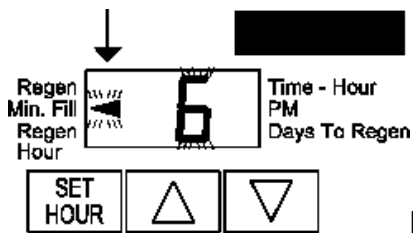
(All programming below is Factory set)



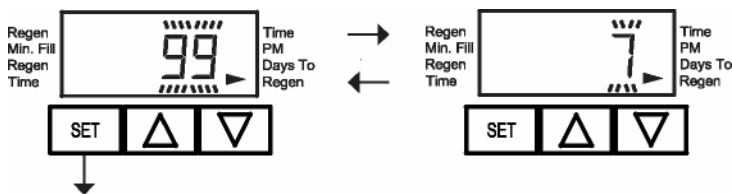
To enter Installer level press SET Hour +Up for 3 seconds and then SET HOUR + UP for 3 seconds



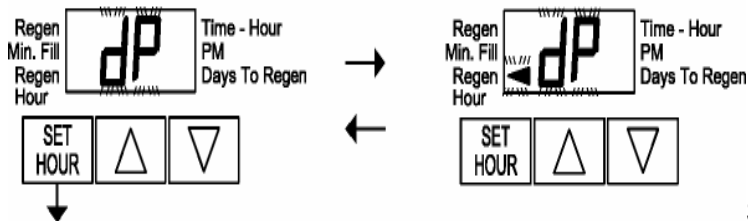
Set to P.8 then press SET HOUR



Leave set to – press SET HOUR



Set to 99, press SET HOUR. Set to 50 press SET HOUR



press SET HOUR to exit Installer Level.

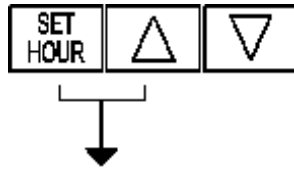
Set to dP and arrow then

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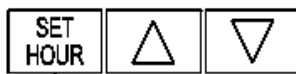
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### 7.4 User Programming

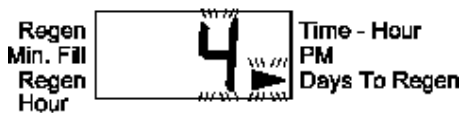
(All programming below is Factory set)



To enter User level press SET HOUR + UP for 3 seconds



Set the Clock to the hour of regeneration using the up and down buttons, after 12 an arrow appears against PM, press SET HOUR



Set the number of days between regenerations, the allowable range is 1 to 99, press SET HOUR to exit User Programming.

### 7.3 COMMISSIONING

The objective of commissioning is to fill the filter with water, check for leaks and prepare it for service. The simplest way to commission the unit is to initiate a backwash. This will eliminate the air from the system and flush the media prior to use.

Before opening the inlet water supply switch on the power, which will activate the piston motor and the timer motor.

Next, start a manual backwash by pressing the UP and DOWN button together for 3 sec or until the motor starts to turn.

When the motor has stopped switch off the power and slowly open the inlet water supply. At first, air will be expelled from the drain line, followed by water once the vessel is full. Allow water to run to drain on the backwash cycle until the drain line runs clear in order to rinse the filter media and remove any fines.

Turn the power back on and allow the complete a manual regen in full by pressing the down button and allowing the valve to complete the cycle.

The filter is now commissioned.

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### 8.0 ROUTINE MONITORING

The following recommendations are made to help the user of the filter confirm that it is performing as required, and to give early warning of possible problems. The operation of the filter is completely automatic, and should not require adjustment.

#### **Weekly**

Check the treated water quality with a test kit.

#### **Monthly**

Check raw water quality, and record. Compare with original quality and adjust frequency of backwash if required.

#### **Six Monthly**

Perform a chlorinated backwash to remove any organic build up on the media. Check filter media depth against original level.

#### **Annually**

Inspect and clean/replace as necessary the piston and the internal seals. A competent engineer familiar with Clack valves should perform this.

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### **9.0 FAULT FINDING AND RECTIFICATION**

#### **9.1 NO FLOW TO SERVICE**

Check mains pressure is above 1.7 bar.

Check inlet water supply

Check inlet and outlet isolating valves are open.

Check service outlet valve is open.

Check pressure drop across media. If excessive, media may be fouled, or internals blocked. Initiate a backwash. If this does not free up the media the filter will need to be inspected and serviced by a competent engineer.

Backwash with chlorine solution to remove organic build up

#### **9.2 POOR TREATED WATER QUALITY**

Check manual by-pass closed.

Check raw water pressure above minimum. If flow is less than design rate, channelling of water can occur in media, which results in inadequate treatment.

Backwash with chlorine solution to remove organic build up

Increase frequency of backwash as media may be becoming overloaded.

Increase backwash flow.

Check piston and seals & spacers. Check raw

water analysis for changes

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### **9.3 NO BACKWASH**

Check electrical supply, fuses etc. satisfactory.

Check program.

Check timer motor is running.

Check drive motor runs, by manually initiating a backwash, and listening for drive motor as it advances between cycles. Replace if necessary.

### **9.4 UNSATISFACTORY CAPACITY BETWEEN BACKWASHES**

Increase frequency of backwash

Check age of media and media level

Backwash with chlorine solution to remove organic build

up Increase backwash flow

## **10.0 WARRANTY AND SERVICE**

Your filter is covered by a parts warranty for a period of one year from installation or 14 months from purchase.

Consumable filter media is excluded from this warranty

Should you have any problems with your filter or require a routine service, please contact your supplier.

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## 11.0 TECHNICAL DATA

### 11.1 PROCESS AND OPERATING DATA

PARAMETER	UNITS	CA1044-3B	CA1248-3B	CA1354-3B	CA1465-3B
FLOW RATE	M3/HR	0.4	0.5	0.7	1
BACKWASH FLOW	M3/HR	0.5	0.9	1	1.2
REGEN TIMES	MIN	16			
MAX TEMP	C	45			

PARAMETER	UNITS	CA1665-3B	CA1865-3B	CA2160-3B	CA2469-3B
FLOW RATE	M3/HR	1.4	1.9	2.25	3.25
BACKWASH FLOW	M3/HR	1.5	2.2	2.6	3.4
REGEN TIMES	MIN	16			
MAX TEMP	C	45			

Flow rate based on organic removal for chlorine removal this can be times by 3 if the valve can take the flow rate, max flow rate 6 m3/hr

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### 11.2 ENGINEERING DATA

#### ACTIVATED CARBON Series Filters

MODEL	CA1044-3B	CA1248-3B	CA1354-3B	CA1465-3B
VALVE				
FILTER VESSEL	1054	1248	1354	1465
HEIGHT (MM)	1607	1458	1601	1984
DIAMETER OF VESSEL (MM)	254	305	331	356
VALVE INLET	1"			
VALVE OUTLET	1"			
VALVE DRAIN	3/4"			
QTY GRAVEL	0.2	0.2	0.4	0.6
QTY ACTIVATED CARBON	0.8	1	1.4	2
POWER	240 VAC 1.2 VA			

MODEL	CA1665-3B	CA1865-3B	CA2160-3B	CA2469-3B
VALVE				
FILTER VESSEL	1665	1865	2160	2469
HEIGHT (MM)	1988	2088	2038	2288
DIAMETER OF VESSEL (MM)	407	458	534	610
VALVE INLET	1"			
VALVE OUTLET	1"			
VALVE DRAIN	3/4"			
QTY GRAVEL	0.6	1	1.5	2
QTY ACTIVATED CARBON	2.5	3.4	4	6
POWER	240 VAC 1.2 VA			

# TE Series FilterPhLOCRI

PRESSURE 1.7 Bar  
MAXIMUM OPERATING  
TEMPERATURE 45.0C HEADROOM - Allow 100 mm greater  
than overall height.

## 12.0 SPARES LIST

<b>PART NO.</b>	<b>DESCRIPTION</b>
XCV3011	Piston WS1TC
XFR1	Riser Tube c/w 1" Dist
XCV3005	Seal & Spacer kit WS1TC
XCV3107-01	Drive Motor 12v
VDLFC3	3/4" Brass flow controller (please specify)
VDLFC4	1" Brass flow controller (please specify)

## 13.0 DECLARATION OF CONFORMITY

**EURAQUA UK**

### **ACTIVATED CARBON FILTER USING CLACK WS1TC VALVE**

**Conform to the following EC Directives where required:**

The Electromagnetic Compatibility Directive 89/336/EEC  
(including any additions or amendments thereafter)

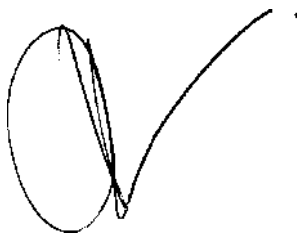
and

The Low voltage Directive (Electrical Safety) 73/23/EEC  
(including any additions or amendments thereafter)

and

The Machinery Directive 89/392/EEC  
(including any additions or amendments thereafter)

Rob Adam

A handwritten signature in black ink, consisting of a large, stylized 'R' followed by a long, sweeping horizontal stroke that ends in a small upward tick.

**Technical Director**