

Operations and Maintenance Manual

Air Sentinel™ Replacement Kit

Model H-28136



⚠ WARNING	
	Read this Manual BEFORE using this equipment. Failure to read and follow all safety and use information can result in death, serious personal injury, property damage, or damage to the equipment.
	Keep this Manual for future reference.

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1.0 Safety

1.1 Understanding Safety Information

This manual contains safety and use instructions that must be followed during the installation, commissioning, operation, care and maintenance and service of the Air Sentinel™ Replacement Kit. All responsible personnel must read this manual prior to working with this instrument and should familiarize themselves with the following safety symbols, signals and pictorials.



This is a safety-alert symbol. The safety alert symbol is shown alone or used with a signal word (DANGER, WARNING, or CAUTION), a pictorial and/or a safety message to identify hazards.

When you see this symbol alone or with a signal word on your equipment or in this Manual, be alert to the potential for death or serious personal injury.



This symbol identifies hazards which, if not avoided, could result in death or serious injury.



This symbol identifies hazards which, if not avoided, could result in minor or moderate injury.



This symbol identifies practices, actions, or failure to act which could result in property damage or damage to the equipment.



This pictorial alerts you to the need to read the manual.



This pictorial alerts you to electricity, electrocution, and shock hazards.

2.0 Overview

2.1 Kit Contents

The kit consists of all the hardware required to replace the Cyclops Purge Controller with the Air Sentinel™ or for a direct replacement.

The complete kit consists of:

- The Air Sentinel
- This Guide
- The Bypass Key
- 10 washer/locknuts
- Cat # 25359 Hole Plug
- Information sticker

If this kit is used for to replace a defective Air Sentinel the hole plug Cat # 25359 will not be required.

2.2 Safety

⚠ WARNING

Nothing is more important than personal safety. There is high voltage connected to the instrument Make sure all voltage has been removed. Disconnect or turn off the water and Air supplies.

To prevent hand injury is recommended that safety gloves be worn.

2.3 Hardware

As there will be quite a bit of hardware removed it may be handy to have a small container to prevent losing any parts during the service work.

3.0 The Cyclops Purge Controller

The purpose of the Purge controller is to ensure the enclosure is in a safe condition before applying line power. To do this it monitors air pressure and air flow. If these two conditions meet the control parameters this is considered safe. To ensure that all potentially explosive air has been purged when power is first applied, a five minute times period must occur prior to power allocation, under the safe condition mentioned above.

The Cyclops system consists of the Cyclops controller, the vent and the external stainless steel interconnection tube.

The controller is sealed and no repair is possible. This manual will guide you through removal of the Cyclops System and the upgrade to The Air Sentinel.



The Air Sentinel is smaller, lighter and includes the vent integral to the controller. This system was designed specifically for the CLX-Ex and CLX-Ex2.



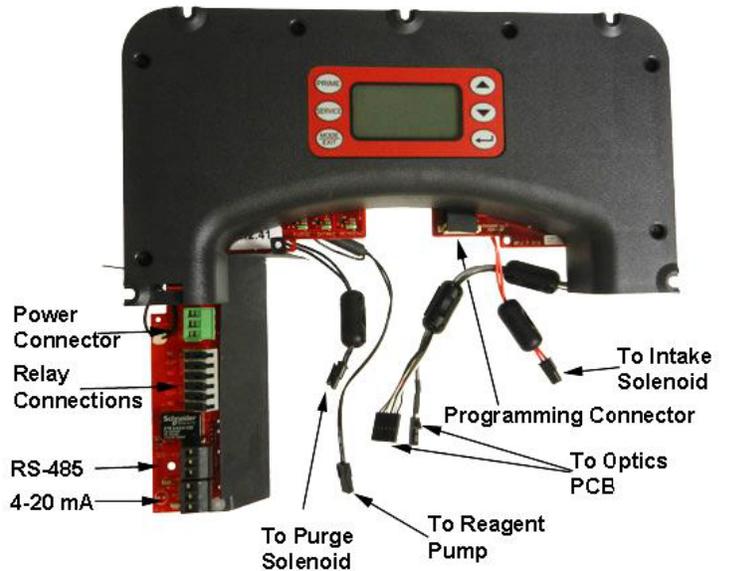
3.1 The Chassis Removal and Replacement

To gain access to the Cyclops mounting hardware it is first required to remove the chassis

Tools Required:

A medium size Philips screwdriver

The Electronic PCB and Chassis assembly is the complete system as shown to the right. This includes the LCD, keypad, power supplies and cables.



Electronic PCB and Chassis Assembly



Chassis Screw Locations

WARNING

To remove the PCB and Chassis assembly, ensure that water and all electrical connections to the instrument are removed.

Steps:

1. Remove electrical connectors to Optics PCB (2 places), the intake solenoid, the purge solenoid and the reagent pump.
2. Remove 8 screws as shown in the photo on the next page. Please note that two different sized screws are used. The five larger screws go around the perimeter of the plastic frame.
3. Remove the entire chassis.
4. Replace the chassis and reverse the steps 1-3 above. Ensure that the PCB is installed correctly in the enclosure before screwing in place.

When properly located, the PCB and Chassis should have no wires or tubing pushing against it.

3.2 Temperature Controller Finger Guard

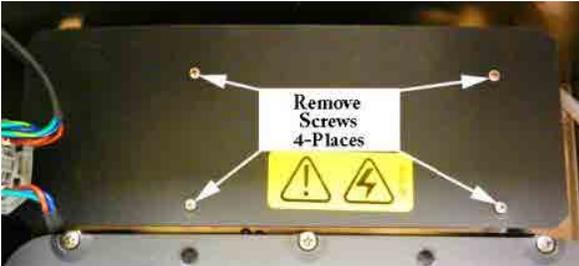
To gain better access the back nuts the Temperature Controller Finger Guard should be removed.

Tools Required:

A small size Philips screwdriver

Located above the Electronic PCB and chassis is a large finger guard and Temperature Controller cover. This is easily removed by loosening the four screws. Use care not to lose these screws as they are quite small.

After replacement of the controller, be sure the reattached the cover and finger guard.



3.3 Cyclops Removal

Tools Required:

14mm (or 9/16") open end wrench

11mm (or 7/16") combination wrench and socket wrenches

Small flathead screwdriver 2.5 - 4mm (or 1/8 - 5/32")

Steps:

WARNING

Remove all power from the system before starting removal to avoid risk of electrocution.

1. Remove the power from the system.
2. Remove the wire connections at terminals 4, 5 and 6 of the Cyclops.
3. Remove the external interconnection stainless steel tube. Undo the connection at both ends. This requires a 14mm (or 9/16") open end wrench.
4. Remove the Chassis. See section 1.1 above.
5. Remove the 10 perimeter nuts flat washers and lock washers. This will require 11mm (or 7/16") tools. Often a combination wrench and a socket set work the best.
6. Once all the hardware is removed you may need to give small tug as the rubber gasket can stick to the enclosure.
7. After the hardware is removed, there is a small safety cover and a DIN rail containing a terminal. The safety cover can be discarded, but the Din rail will need to be replaced when installing the Air Sentinel.

CAUTION

Use care as the Cyclops weighs over 2.3 kg (5 lbs).

3.4 Removing the Cyclops Vent

Tools and Supplies Required:

14mm (or 9/16") open end wrench

23mm (or 29/32") closed end wrench

Steps to remove the Vent:

1. Remove the connection to the external interconnection stainless steel tube if this has not already been done. This requires a 14mm (or 9/16") open end wrench.
2. From inside the enclosure use a 23mm (29/32") closed end wrench to remove the nut and washer, then remove the vent.

3.5 The Information Sticker

When replacing the Cyclops with the Air Sentinel one of the four front door yellow stickers will have incorrect information. The kit includes a replacement sticker to be used. The stickers are exceedingly difficult to remove. To make this easier, we recommend that this sticker be placed over the existing sticker that showed the Minimum and Maximum Overpressure values.

WARNING:

PRESSURIZED ENCLOSURE

Enclosure shall not be opened unless power is removed or area has been properly tested and is known to be non-hazardous!

MINIMUM OVER PRESSURE:	≥ 0.6 MILLIBAR
MAXIMUM OVER PRESSURE:	4 MILLIBAR
MINIMUM PURGE FLOW RATE:	35 SLPM
MINIMUM PURGING DURATION:	5 MINUTES
MAXIMUM LEAKAGE RATE:	45 LPM

L# 74018

4.0 Installing the Air Sentinel

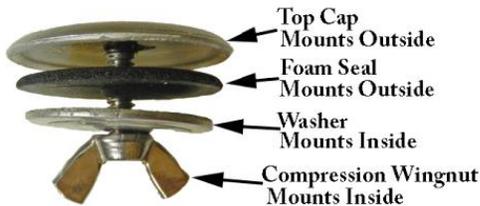
The kit includes the Air Sentinel, ten locking nuts and a top hole plug.

4.1 Installing the Top Hole Plug (25359)

Tools Required:

$\frac{3}{8}$ " or 10mm nut-driver or socket wrench

As the Air Sentinel has an integral vent the Cyclops Vent was removed. This hole must now be plugged. A stainless steel plug is provided. This has rubber seal that goes on the outside and washer and nut on the inside.



The plug needs to be sealed until there is no gap between the top cap and the enclosure but do not over tighten.



4.2 Install the Air Sentinel

Tools Required:

11mm (or $\frac{7}{16}$ ") combination wrench and socket wrenches

The Air Sentinel is sent with 10 Stainless Steel locking nuts. These are a combination of a nut, washer and lock to make installation easier.

When installing the din rail needs to be installed at the top left side tightened with two nuts.

After installing, check all 10 nuts one last time to ensure all are tight.

4.3 Air Vent Connection

Tools Required:

Knife or Scissors

The vent from the top of the optics assembly previously had no final connection. A check valve was used to prevent water from entering the enclosure.

This vent must now connect to a fitting on the Air Sentinel through the same check valve. The tube is shortened by about 50-60mm. This tube will be placed on the output of the check valve to allow for the optics to vent through Air Sentinel.



Installed Air Sentinel

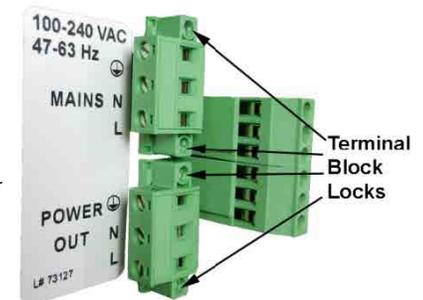
4.4 Wiring the Air Sentinel

Tools Required:

Small flat blade screwdriver

Each of the power terminal blocks can be removed for ease of use. Be sure to tighten these locks after connections are finished.

As stated on the label, Mains power is applied to the upper set of terminals and the connection to the DIN rail must be made to the lower set of terminals.



4.5 Chassis Replacement

Refer to section 1.1 and reverse all the electrical connections. When replacing the chassis, ensure there are no interferences, that the finger guards are in place and there no pinched wires.

This completes the installation. Refer to the Air Sentinel for operation.

5.0 Replacement of a Defective Air Sentinel

In this application the instrument should look exactly the same after replacement. It would be wise to take a few photos before disassembly.

Be sure to note problems and mark these on the defective unit. In most instances you can contact HF scientific for an RMA number to return the defective controller.

Tools Required:

11mm (or 7/16") combination wrench and socket wrenches

Small flathead screwdriver 2.5 - 4mm (or 1/8 - 5/32")

WARNING

To remove the PCB and Chassis assembly, ensure that water and all electrical connections to the instrument are removed.

Steps:

1. Remove the chassis Assembly as shown in section 2.1.
2. Remove the Temperature Controller Finger Guard as described in section 2.2.
3. Remove the existing air vent connection. See section 3.3
4. Remove the Mains and Power Out connections terminal blocks using the flat blade screwdriver. It is not necessary to wires from the terminal blocks unless these terminal blocks have been damaged. See section 3.4
5. Remove the 10 Washer/Locknuts.
6. Remove the defective Air Sentinel.
7. Replace in the reverse order of steps 1-6. Ensure all hardware is tight. Also make certain that the terminal blocks have been tightened into place.

6.0 Warranty

Watts Regulator Co. (the "Company") warrants each product to be free from defects in material and workmanship under normal usage for a period of two (2) years from first use or three (3) years from date of invoice, whichever occurs first. In the event of such defects within the warranty period, the Company will, at its option, replace or recondition the product without charge. Parts, which by their nature are normally required to be replaced periodically, consistent with normal maintenance, specifically reagents, desiccant, sensors, electrodes and fuses are excluded. Also excluded are accessories and supply type items.

Proof of purchase (invoice or paid order confirmation) and/or first use (commissioning) must be provided when making a product warranty claim.

THE WARRANTY SET FORTH HEREIN IS GIVEN EXPRESSLY AND IS THE ONLY WARRANTY GIVEN BY THE COMPANY WITH RESPECT TO THE PRODUCT. THE COMPANY MAKES NO OTHER WARRANTIES, EXPRESSED OR IMPLIED. THE COMPANY HEREBY SPECIFICALLY DISCLAIMS ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

The remedy described in the first paragraph of this warranty shall constitute the sole and exclusive remedy for breach of warranty, and the Company shall not be responsible for any incidental, special or consequential damages, including without limitation, lost profits or the cost of repairing or replacing other property which is damaged if this product does not work properly, other costs resulting from labor charges, delays, vandalism, negligence, fouling caused by foreign material, damage from adverse water conditions, chemical, or any other circumstances over which the Company has no control. In addition, the Company shall not be responsible for any costs incidental to the Company's warranty response efforts, including, without limitation, costs associated with the removal and replacement of systems, structures or other parts of facilities, de-installation, decontamination and re-installation of products, or transportation of products to and from the Company. This warranty shall be invalidated by any abuse, misuse, misapplication, improper installation or improper maintenance, alteration of the product, or use of any parts or accessories (including but not limited to reagents) not provided by the Company.

Some states do not allow limitations on how long an implied warranty lasts, and some states do not allow the exclusion or limitation of incidental or consequential damages. Therefore the above limitations may not apply to you. This Limited Warranty gives you specific legal rights, and you may have other rights that vary from State to State. You should consult applicable state laws to determine your rights. **SO FAR AS IS CONSISTENT WITH APPLICABLE STATE LAW, ANY IMPLIED WARRANTIES THAT MAY NOT BE DISCLAIMED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO ONE YEAR FROM THE DATE OF ORIGINAL SHIPMENT.**



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USA: T: (239) 337-2116 • Toll-Free (888) 203-7248 • F: (239) 454-0694 • HFscientific.com

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