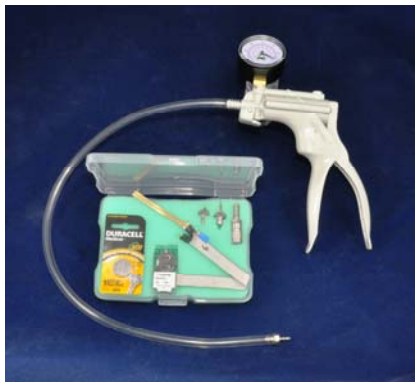
USER GUIDE FOR HOUSING SENTRY COMPETE SYSTEM



UnderWater Camera Stuff

www.UWCameraStuff.com
Contact: Info@UWCameraStuff.com

Offering custom-designed products to enhance currently-available underwater camera equipment

WARRANTY

UnderWater Camera Stuff warrants the Housing Sentry components from defects for a period of one year from date of purchase. The pump is warranted for a period of 90 days. There is no warranty for your housing or any contents including but not limited to the camera, lens or port.

DISCLAIMER

The Housing Sentry will significantly minimize the likelihood of a flooded housing but no one, including UnderWater Camera Stuff, can guarantee that a flood will not happen to your equipment. When used properly, the Housing Sentry will aid you in detecting problems with your housing prior to entering the water and will continually monitor the status throughout your dive. It is your responsibility to become familiar with how to operate the Housing Sentry and to then use it correctly.

CONTACT INFORMATION

Get in touch with UnderWater Camera Stuff should you have any questions or problems.

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PEACE OF MIND – that is what you chosen with your purchase of the Housing Sentry. We congratulate you on the wisdom of your decision. You can now focus on your dive and know that the Housing Sentry will alert you if there is a problem with the housing. Along with peace of mind, you will enjoy the following benefits by using the Housing Sentry Complete System:

Vacuum provides tight seal of all o-rings and housing parts

- Reducing the possibility of problems in the rinse tank
- Reducing the effects of wave action at the surface
- Reducing the possibility of problems as housing is handed-off at the start and end of a dive
- Reducing the possibility of problems if you enter the water holding the housing

Continuous monitoring of your housing's status

- Periodic flashing of the green LEDs to confirm the vacuum is being maintained
- Immediate alert with the flashing of the red LEDs if the vacuum is reduced and/or lost
- Immediate notification with the rapid flashing of the red LEDs if water enters the housing
- Notifies you before entering the water that your housing seals are either good or compromised

INCLUDED IN HOUSING SENTRY COMPLETE SYSTEM

- Electronic circuit board assembly with the LEDs and moisture pick-up strips connected
- Vacuum connector, customized to your housing and installation option
- Input fitting
- Block-off plug with adjustable-length bead chain and chain end piece
- 7/16" Wrench
- Battery
- High-bond mounting tape
- Vacuum pump

- Check the knobs and buttons.
  ⇒ Are they all there and working properly?

- Are there any cracks in the pump hose?

I can pull the vacuum but the level slowly drops. What should I check?

Identifying the cause of a slow leak can be difficult and frustrating. It is best to work slowly and methodically, paying close attention to details. After working on an area, try to again pull the vacuum. If the vacuum still cannot be maintained, inspect another area and then try to pull a vacuum.

- If you had been using the housing with no problems but just made a set-up change, carefully check the area(s) of the housing that you altered.

- If you just took the housing out of storage, check it carefully for any damage that may have occurred.

- Carefully check the main housing seal.
  ⇒ Do the front and back sections of the housing line up properly?
  ⇒ Examine the o-ring. Is there lint or a hair on it? Are there any cuts, cracks or nicks?

- Check the knobs and buttons
  ⇒ With the manual pump connected and the housing under vacuum, activate each button while watching the fall rate on the vacuum gauge. A change in the rate will indicate a problem with the activated control. If you use the rechargeable pump, this step cannot be performed as the pump does not include a gauge.

- Check for cracks or cuts in the pump hose

- Carefully check the main housing seal.
  - ⇒ Do the front and back sections of the housing line up properly?
  - ⇒ Is the o-ring missing?
  - ⇒ Is it properly in place?
- Check the knobs and buttons.
  - ⇒ Are they all there and working properly?
- Examine the pump hose for cracks or cuts.

I start to get a vacuum but then it is quickly lost. What should I do?

If you get the green LEDs to flash but then they go out and the red LEDs start flashing or the red LEDs change from a rapid flash to a slow flash but then go back to a rapid flash, you are quickly losing the vacuum. The problem is most likely lint or other debris on an o-ring or the port or other part is not lining up properly.

- If you had been using the housing with no problems but just made a set-up change, carefully check the area(s) of the housing that you altered.
  - ⇒ Are the latches securely fastened?
  - ⇒ Is the port properly installed and secure?
  - ⇒ Are the front and back sections of the housing matching up properly?
- If you just took the housing out of storage or traveled with it, check it carefully for any damage that may have occurred.
- Carefully check the main housing seal.
  - ⇒ Do the front and back sections of the housing line up properly?
  - ⇒ Examine the o-ring. Is there lint or a hair on it? Are there any cuts, cracks or nicks?
  - ⇒ Is it properly in place?

You have also received a Self-Installation Guide specific to your installation option. If you have not already done so, follow the steps in the Self-Installation Guide to mount the Housing Sentry components in your housing. Depending upon the installation option, you may have also received a Self-Install Kit or other tools to aid in the installation process.

HOW THE ELECRONIC CIRCUIT WORKS

Creating Vacuum

With the battery in place and no vacuum drawn, the electronic circuit will be in standby mode. Even while in standby, it will monitor for moisture on the pick-up strips.

Once you start to pump and reach about two inHG of vacuum, the electronic circuit will fully activate triggering the rapid flashing of the red LEDs. Once the vacuum reaches about six inHG, the flash rate slows. At approximately ten inHG of vacuum, the red LEDs stop flashing and the green LEDs begin to blink at a very slow rate.

Reducing Vacuum

At the recommended vacuum level of ten inHG, the green LEDs will be blinking at a very slow rate and will continue until the vacuum is reduced to approximately nine inHG. As the vacuum level drops below nine inHG, the green LEDs will stop blinking and the red LEDs will begin to slowly flash. The slow flash rate will continue until the vacuum drops to about six inHG. The flash rate of the red LEDs will change to rapid as the vacuum drops below six inHG and will continue until there is about two inHG of vacuum. Once the vacuum level drops below approximately two inHG, the red LEDs will stop flashing.

Moisture in Housing

As long as a working battery is in place, the electronic circuit will activate the red LEDs to rapidly flash if moisture is detected at the

moisture pick-up strips. The housing does not need to be in a vacuum state for the moisture detection feature to be triggered.

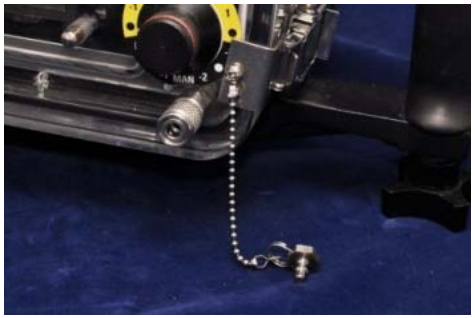
It is advisable to create these different conditions and become familiar with how the Housing Sentry system reacts as the environment changes within your housing. This knowledge will be valuable if, at a later time, you need to troubleshoot a problem. Following are pictures plus step-by-step instructions for activating the Housing Sentry.

BEFORE YOUR DIVE

Using the Housing Sentry is simple and adds very little time or steps to your pre-dive routine.

Set up your camera and housing as normal.

Once your camera is in place and the housing is closed, remove the block-off plug from the vacuum connector



If salt water is left to evaporate, the salt will crystallize and could create a leak. To solve, soak the area in fresh water to dissolve the salt crystals. To prevent, thoroughly rinse your housing after every dive. If you cannot rinse it immediately following the dive, keep the housing covered/damp and then give it a good soaking once fresh water is available.

Too much silicone grease will attract hair, lint, sand, etc. Use it sparingly. An o-ring should look shiny without lumps of silicone.

O-rings develop flat spots. An o-ring left compressed in position will, over time, develop flat spots. Do not store your housing with the o-rings in place. Also, have your housing serviced as suggested by the manufacturer.

Old o-rings lose their elasticity and ability to rebound. Replace the housing o-rings s recommended by the manufacturer.

I cannot draw a vacuum. What should I do?

If, when using your pump, the red LEDs do not start to flash or they start to flash but quickly stop, you have a complete failure of a seal. The problem will likely be obvious. Here is a list of items to check:

- If you had been using the housing with no problems but just made a set-up change, carefully check the area(s) of the housing that you altered.
  - ⇒ Is the main o-ring missing?
  - ⇒ Are the latches securely fastened?
  - ⇒ Is the port properly installed and secure?
- If you just took the housing out of storage or just traveled, check it carefully for any damage that may have occurred.
- Do you have a good battery installed?
  - ⇒ Moisten your fingertip and place over the moisture pick-up strips. The result should be rapidly flashing red LEDs.

If you are finished diving for the day
Relieve the vacuum from the housing following the previously described steps for the type of pump you are using. By removing the vacuum, the electronics will go into standby mode and reduce the drain on the battery.

If you are finished diving for the near future
Relieve the vacuum from the housing by following the steps previously described for the type of pump you are using. Remove the battery to prevent any possibility of leakage. You may be able to use the battery again in the future if you handle and store it carefully so it is protected from bodily oils and other contaminants.

MAINTENANCE

Once you are finished diving and ready to store away your equipment, there are a few steps you should take:

- Remove battery from Housing Sentry electronic circuit board assembly
- Confirm that the block-off plug is inserted in the vacuum connector

At least once a year, remove the vacuum connector from the housing. Remove the o-ring then clean and apply a small amount of silicone grease to the o-ring. Reinstall the o-ring on the vacuum connector. Following the instructions in the Installation Guide, reinstall the vacuum connector in your housing.

TROUBLESHOOTING

Most leaks are caused by operator error. The most common are leaving out an o-ring, pinching and o-ring or having foreign matter (sand, salt, hair, lint, etc.) in the o-ring groove. Below you will find general information and specific guidance that will be helpful if the Housing Sentry detects a leak and you are reading this section for direction in solving the problem.

Insert the input fitting into one end of the pump hose. Connect the other end of the hose to the pump. Install the input fitting into the vacuum connector. Start using the pump to create a vacuum which will activate the Housing Sentry electronics.

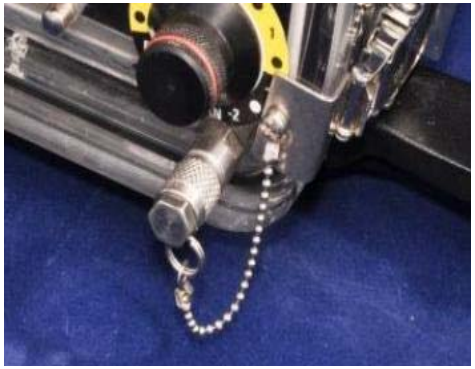
When the vacuum reaches about two inHG, the red LEDs will begin blinking at a fast rate.

The flash rate of the red LEDs will slow when the vacuum reaches six inHG.

The red LEDs will stop flashing and the green LEDs will begin to slowly blink when the vacuum reaches ten inHG.

Stop pumping when the green LEDs light. Remove the input fitting from the vacuum connector.

Insert the block-off plug into the vacuum connector. It is important to keep the block-off plug in the vacuum connector whenever the pump is not connected.



The plug keeps salt and other debris out of the vacuum connector. The vacuum connector can leak if exposed to enough pressure. With the plug installed, the vacuum connector can handle pressure of 4,000 psi. Our testing shows that the vacuum connector without the plug will leak when exposed to a pressure of 80 psi which is equivalent to 150' of depth.

The housing should now be allowed to set for at least fifteen minutes. If the green LEDs are flashing after the fifteen minutes have elapsed, your system is ready to go on a dive. You may do a normal leak-check dunk in the camera bucket or just get started diving.

DURING YOUR DIVE

The Housing Sentry will give you regular feedback with the flashing green LEDs so you know the vacuum is intact. Depending on where you have placed your LEDs, you may be able to see the green flash through the eyepiece. You will soon become used to the periodic flashing so you will be aware but not distracted by it.

If the vacuum level drops below ten inHG, the green LEDs will stop flashing and the red LEDs will begin to slowly flash. This indicates that your housing seals have been compromised so you should end your dive. Return to the surface at a speed that is safe for your depth and dive profile. The red LEDs will flash rapidly if the vacuum level drops below six inHG.

If you realize during a dive that the block-off plug is not in the vacuum connector, return to the surface at a safe speed. At the surface, install the plug into the vacuum connector and then continue your dive. When the dive is concluded, remove the plug from the vacuum connector. In clean, fresh water, soak the vacuum connector and block-off plug for at least one hour.

AFTER YOUR DIVE

At the end of your dive, rinse your housing as normal. Then, complete the steps described below based on your situation.

If you are continuing to dive and using the exact set-up (no battery, memory, lens or port change):
You may leave the Housing Sentry activated. This will use a bit more battery life but our testing has shown that a battery will last for approximately 240 hours of almost constant activation.

If you are continuing to dive, need to make a set-up change and use the manual pump:
Remove the block-off plug from the vacuum connector. Connect the manual pump by inserting the input fitting into the vacuum connector. Release the vacuum by pressing the vacuum release lever on the pump. Once the vacuum is relieved, your housing will open as normal. Make your set-up changes and then follow the steps described in the "Before Your Dive" section to draw a vacuum.

If you are continuing to dive, need to make a set-up change and use the rechargeable pump:
Remove the block-off plug from the vacuum connector. Remove the hose from the rechargeable pump and insert the input fitting into the vacuum connector. As soon as the fitting is connected, the vacuum will be relieved and you can open your housing. Make your set-up changes and then pull a vacuum by following the steps described in the "Before Your Dive" section.