

US EPA ARCHIVE DOCUMENT

Sony HC1 & HC7 Digital Video Camera with Light & Motion “Bluefin” Housing, Lights, and Monitor

Standard Operating Procedure (SOP)



EPA Region 10 Dive Team

Store this document in black digital video pelican in dive locker
Revisions to Tim Siwec siwec.tim@epa.gov 206-553-2147

BEFORE YOU LEAVE THE DIVE LOCKER

2 Days Before:

1. **Charge ALL batteries:** (all chargers found in tan pelican)
 - Camera:** 2 extended capacity info lithium (1 is a spare), use camera's basic charger via camera itself. Check battery status on each battery. Charge both extended life batteries before a dive operation.
 - Housing:** Charge batteries in monitor back for 12-14 hours, and each of the two long black light batteries (NiMH) until charger indicates charge is complete. Each has unique charger. Do not jam batteries onto charger cord. Ensure all pins connect smoothly between batteries and charger cable.
2. **Load fresh Mini DV video tape.** Tape goes into the bottom of the camera. First remove camera from tray and power camera on (chrome swivel knob on right rear of camera) slide and hold the OPEN/EJECT lever and open the lid. Then the cassette compartment automatically comes out and opens up. Insert a cassette with its window facing outwards, then press PUSH. The cassette compartment automatically slides back in. **Do not force the cassette into the compartment.**

1 Day Before:

1. **Check condition of both o-rings** between housing body & housing back plate.
2. **Check camera's video and still settings** to make sure they haven't been accidentally erased or changed. With camera powered on open LCD viewer touch screen and touch "Pmenu". See configuration setting at the end of this document for optimal settings*. Remember to check camera's data in time. Set if necessary.
3. **Install camera on tray;** connect **all 3** housing cables to corresponding locations (see blue tape on cables for locations). Ensure the black rocker arm on the front left of the base meets up precisely and straddles the exposure lever on the left front of the camera for proper operation. This is important because the exposure level can be force up or down if improperly aligned leading to degraded video. **Tighten screw on bottom of tray finger tight.**
4. **Slide tray into main housing assembly until latch lock slides into place; you may need to manually push latch down to secure tray in place.** Now install housing rear back plate onto main housing assembly. Use two hands to rotate each compression **clip slowly and evenly** until clips click into place. Ensure spring-loaded sliding locks located below the clips spring into place
5. **Install light batteries into pods (align contacts) and close hatches.** Be sure hatch locks are secure! **Double check that monitor charging port plug has been replaced.**
6. Attach lights to snakelike black flexible light stands located in black pelican lid (POP INTO PLACE), then attach to camera's body (TWIST LOCK), proceed to plug light cables into corresponding battery pod. *Make sure lighting batteries control and connections are facing the rear of the housing.*
7. Repeat this step for external monitor but place the monitor on top and in the center of housing. **NEVER SUBMERGE WITHOUT THE 2 (TWO) LIGHTING, AND THE 1(ONE) MONITOR CABLE IN PLACE. FAILURE TO DO SO WILL SHORT OUT THE LIGHT POD(S) AND/OR MONITOR BACK.**
8. Take a short test video & picture to see if the camera is configured properly, tape is blank, memory card is blank, and lights function properly when activated (see operation section). **DO NOT OPERATE VIDEO LIGHTS OUT OF WATER FOR MORE THAN A FEW SECONDS.**

AT THE DIVE SITE

Testing for Leaks:

Submerge camera (in housing) in cooler and check for leaks, make certain that housing rear back plate, cables, lens, and light pod hatches are snugly and securely connected.

Operation: (with camera in housing)

Turn on: Press the ON button for several seconds and release.

Taking video:

Press the red (ON/Mode) button on rear back plate. Camera and monitor will turn on and is ready for recording. Red "REC" button on right grip is the method of starting and stopping recording. The other buttons on the grips are explained below in the "Controls" section below. **CHECK THAT THE RED LIGHT IS NOT ON ACCIDENTALLY WHILE DIVING. BUTTON IS SENSITIVE.**

Taking still pictures:

Press the "Photo" button on the left grip. That's it! Camera will automatically default back to "Camera-Tape" mode for video after still picture is taken.

Navigating Menu:

Press the Red (ON/Mode) button on rear back plate to cycle through 3 mode options available, but realistically the only mode you will need is "Camera-Tape" for video.

Powering Down:

Press AND HOLD "AF/OFF" button for 3 seconds on the right grip to power down camera and housing.

ABORT DIVE IMMEDIATELY AND SAFELY IF ANY OF THE FOLLOWING ARE OBSERVED:

- Moisture Alarm Led flashes red/green
- Camera ceases operation or lights abruptly turn off
- Housing hatches appear loose
- Droplets are visible on any housing port.

Controls:

Left Smart Grip Controls

- Far - Moves focus point further from camcorder.
- Near - Moves focus point closer to camcorder.
- Photo - Records still video capture to Memory Stick (in either mode).
- Light - After initial power up from battery pod, cycles Elite Lights through three output levels. Press and hold for three seconds to turn lights off.
- Photo Dis. - Non-operational

Right Smart Grip Controls

- Tele - Zooms camcorder to telephoto.
- Wide - Zooms camcorder to wide angle.
- Rec - Toggles camcorder between record/standby.
- Mom.Af - Press and hold this button to put the camcorder into "momentary AF". Camcorder remains in AF as long as the button is pressed. Once released, the camcorder switches to manual focus. This is useful in stopping the camcorder from "seeking" when filming in a low contrast environment. To return the camcorder to AF, press the AF/OFF button.
- AF / Off - (dual function) - Press and release, to switch camcorder to auto focus. Press and hold for 3 seconds, to turn the camcorder off.

Rear Plate

- On/Mode - Turns the camcorder on and cycles through modes.
- LED - Status light; Red indicates recording, green indicates stand-by.
- Moisture Alarm - Led will flash red/green and housing will beep if moisture is detected inside the housing. Note: During camera power up phase or when installing rear plate, moisture alarm will beep and flash indicating a diagnostic check.

Housing Left Side

- Telemacro - Zooms camera to full telephoto and allows camera to focus closer.
- Expanded Focus - While in stand-by mode, magnifies the image 4X to provide a better visual check to ensure proper focus.
- Exposure Mode - Press to switch to manual exposure. Use up and down arrows to increase or decrease exposure. Press Exposure button again to return to auto exposure.

NORMAL CLEANING PROCEDURES

Immediately After Diving:

Soak the camera (in housing) in FW (If unavailable, use seawater) on the dive platform. Soak in between dives and before cleaning to prevent salt crystal formation.

In Dive Locker:

1. Rinse camera to remove dirt & saltwater if not done at the dive site. Press all the buttons on housing to free up any residual salt water to prevent crystallization while either running fresh water over the unit or soaking it. Place on towel to dry
2. **O-ring Care & Maintenance:**
 - The sealing system used on the rear plate incorporates two O-rings. This is the most critical area of the housing for maintenance and should be inspected after every dive. In addition inspect and clean the lens O-ring as well/remove to allow to dry.
 - Make sure the O-rings and the mating surface on the inside of the main housing are free of grit, hair, lint and anything that could potentially breach the O-ring seal. To remove O-rings, use finger pressure OR a paper clip rounded end to lift the O-ring out of the groove.
 - Clean the groove with a lint free swab or the folded edge of a paper towel.
 - Apply thin layer of O-ring grease to all O-rings
3. **CLEAN THE CONNECTORS!!!** - Pay special attention to the condition of the connectors at the end of the cables. Equally important is the female receptacle in the battery pod. These metal connectors should "shine like a new penny."
Apply a light film of O-ring grease to cables and connectors to prevent pre-mature degradation.

Storing Notes:

Store housing and travel case in a dry location the first 24 hours after a dive. Leave the rear back plate on the housing, but not latched to allow for air circulation. This can be accomplished by aligning and partially connecting the rear back plate to the housing, **but only rotate latch locks a quarter turn**. Similarly, leave travel case lid about two inches open. Store with lens on housing. Slide the tray (with camera attached) into housing until locked into place. Detach monitor and lights, let dry and place in black pelican. Store with battery pods attached to housing, but make sure to rinse and clean with cotton swabs if necessary any dirt or debris that may be lodged underneath housing. Allow any residual water to evaporate from the travel case prior to storing the housing.

Flooded Housing First Aid:

- Shake the housing & camera over a paper towel to see if water drops are still present.
- Wash any saltwater out of the camera with fresh water, preferably distilled. Avoid the electronics unless they were flooded. **DO NOT USE alcohol or silicone.**
- Dry with a towel and then carefully use a hair dryer.

Example of the housing's light assembly



*Relevant configuration settings:

Under "Menu"

Under "STANDARD SET"

REC FORMAT = HDV1080
EXT SUR MIC = EXT MIC
i.LINK CONV = ON (HDV-DV)
REMOTE CRTL = ON
REC LAMP = OFF
DISP OUTPUT = V-OUT/PANEL

Under "MEMORY SET" then "STILL SET" (digital still settings)

QUALITY = FINE (camera defaults to lower setting make sure to check this)
IMAGE SIZE= 1920x1440