

# Digital Wireless Video Scope

BK8000

Features Touch Screen Display & Dual View Imager



**Snap-on**

User Manual Part # ZBK8000

## Table of Contents

General Safety Information.....	3
Work Area Safety .....	3
Personal Safety .....	3
BK8000 Battery and A/C Power Supply.....	3
Video Scope Use and Care .....	4
Service .....	4
Specific Safety Information.....	5
FCC Statement .....	5
Video Scope Safety.....	5
Getting Started.....	6
Description.....	6
Specifications.....	6
Standard Equipment .....	8
BK8000/A/C Power Supply Inspection and Set-Up.....	9
Assembling the Charger.....	9
Charging the BK8000.....	9
Cleaning Instructions.....	10
Assembly .....	10
To Connect the Imager to the Imager Handle.....	10
Tool and Work Area Set-Up .....	11
Operating Instructions .....	11
Using the Imager.....	11
Using the Viewer Unit.....	11
Using the Display Unit Rear Camera.....	12
Taking still pictures and videos with the Imager Handle.....	12
Using the kickstand and magnet.....	12
User Button Interface .....	13
Battery Status Display.....	13
Pairing BK8000 Viewer and Imager Handle.....	16
Using the BK8000 Expansion Connectors.....	16
Image Transfer to Computer using USB.....	17
Transportation & Storage .....	17
Maintenance Instructions .....	17
Service and Repair .....	17
Troubleshooting.....	18
Warranty .....	18
Snap-on Service Center Locations.....	19

U.S. Patents 7,384,308; 7,431,619 B2; 7,581,988 B2; 7,584,534; 7,758,495 B2; 7,979,689; other patents pending. Industrial Designs and other patents pending. Perceptron is a registered trademark of Perceptron, Inc. © 2011 Perceptron, Inc. All Rights Reserved. Perceptron, Inc., 47827 Halyard Dr., Plymouth, MI 48170. www.perceptron.com

## General Safety Information

### ⚠ WARNING:



Read and understand all instructions. Failure to follow all instructions listed below may result in electric shock, fire and/or serious personal injury.

SAVE THESE INSTRUCTIONS!

### Work Area Safety

- Keep your work area clean and well lit. Cluttered benches and dark areas may cause accidents.
- Do not operate electrical devices or video scope tool in explosive atmospheres, such as in the presence of flammable liquids, gases, or heavy dust. Electrical devices or visual inspection tools create sparks which may ignite the dust or fumes.
- Do not use the video scope around corrosive chemicals.
- Keep bystanders, children, and visitors away while operating visual inspection tool. Do not let visitors contact the unit.

### Personal Safety

- Stay alert, watch what you are doing and use common sense. Do not use video scope while tired or under the influence of drugs, alcohol, or medications. A moment of inattention while operating tools may result in serious personal injury.
- Do not overreach. Keep proper footing and balance at all times. Proper footing and balance enables better control of the tool in unexpected situations.



• Use safety equipment. Always wear eye protection. Dust mask, non-skid safety shoes, hard hat, or hearing protection must be used for appropriate conditions.

- Use proper accessories. Do not place this product on any unstable cart or surface. The product may fall causing serious injury to a person or serious damage to the product.



• Prevent object and liquid entry. Never spill liquid of any kind on the video display unit. Liquid increases the risk of electrical shock and damage to the product.

- Do not use this device for personal or medical use/inspection in any way.
- The unit is not shock-resistant. Do not use it as a hammer or drop it.

### BK8000 BatteC Power Supply

#### ⚠ WARNING:

To reduce the risk of serious injury, read these precautions carefully before using the battery charger or battery.

### A/C Power Supply

- Do not probe A/C power supply with conductive objects. Shorting of battery terminals may cause sparks, burns or electrical shock.
- Do not use A/C power supply if damaged. A damaged A/C power supply increases the risk of electrical shock.
- Use an appropriate power source. Do not attempt to use a step-up transformer or an engine generator. Doing so may cause damage to the A/C power supply of the BK8000 resulting in electrical shock, fire or burns.
- Do not allow anything to cover the A/C power supply while in use. Proper ventilation is required for correct operation of the A/C power supply. Allow a minimum of 4" (10 cm) of clearance around the charger for proper ventilation.
- Unplug the A/C power supply when not in use. Reduces the risk of injury to children and untrained persons.
- Unplug the A/C power supply from outlet before attempting any maintenance or cleaning. Reduces the risk of electrical shock.
- Do not use A/C power supply in a damp, wet or explosive environment. Do not expose to rain, snow or dirt. Contaminants and moisture increase the risk of electrical shock.
- Do not open the A/C power supply or BK8000 housings. Have repairs performed only at authorized locations. (see Snap-on Service Center Location page 19).
- Do not carry the A/C power supply by power cord. Reduces the risk of electrical shock.

### Battery Safety

The batteries in the BK8000 are NOT user replaceable. Call your Service Center if you believe the BK8000 battery is in need of service.

- Properly dispose of the BK8000. Exposure to high temperatures can cause the battery to explode, so do not dispose of in a fire. Some

countries have regulations concerning battery disposal. Please follow all applicable regulations.

- Charge battery in temperatures above 32 degrees F (0 degrees C) and below 113 degrees F (45 degrees C). Store BK8000 in temperatures above -13°F (-25°C) and below 95°F (35°C). Storage for a long time at temperatures above 95°F (35°C) will reduce the capacity of the BK8000. It is recommended to store the BK8000 at 77°F (25°C) to maximize battery life. Proper care will prevent serious damage to the battery. Improper care of the battery may result in battery leakage, electrical shock and burns.
- If the BK8000 is damaged, do not plug the A/C power supply into it. Do not attempt to charge.
- Never disassemble the BK8000 unit. There are no user-serviceable parts inside. Disassembling the BK8000 may cause electrical shock or personal injury.
- Avoid contact with fluids leaking from the BK8000 unit. Fluids may cause burns or skin irritation. Thoroughly rinse with water in case of accidental contact with fluid. Consult doctor if fluid comes into contact with eyes.

#### Video Scope Use and Care

- Use video scope only as directed. Do not operate the inspection unit unless the owner's manual has been read and proper training has been completed.
- Do not immerse the handheld display unit in water. Store in a dry place. Such measures reduce the risk of electric shock and damage. The imager head and the cable are water resistant when the unit is fully assembled, but the video display unit/handle is not.
- Do not use the camera if condensation forms inside the lens. Let the water evaporate before using again.
- Do not use tool if ON/OFF switch is not properly working. Any tool that cannot be controlled with the switch is dangerous and must be repaired.
- Store idle equipment out of the reach of children and other untrained persons. Equipment is dangerous in the hands of untrained users.
- Maintain the video scope with care. Properly maintained tools are less likely to cause injury.
- If unit is dropped, check for breakage of parts, and any other conditions that may affect the tool's operation. If damaged, have the tool serviced before using. Many accidents are caused

by poorly maintained tools.

- Use only accessories that are recommended by the manufacturer for your tool. Accessories that may be suitable for one tool may become hazardous when used on another tool.
- Dry your hands before turning the unit ON or OFF.
- Protect against excessive heat. The product should be situated away from heat sources such as radiators, heat registers, stoves or other products (including amplifiers) that produce heat. Do not use the unit near moving machinery or areas where the temperature will exceed 113°F (45°C).

#### Service

- Do not attempt to take any pieces of this unit apart unless directed to by this manual.
- Follow instructions for changing accessories. Accidents are caused by poorly maintained equipment.
- Provide proper cleaning. Do not use acetone to clean the unit. Instead, use isopropanol.
- Gently clean the LCD with a dry cloth.
- Stop using the unit if it starts smoking or emitting noxious fumes.
- Refer video scope to qualified service personnel under any of the following conditions:
  - If liquid has been spilled or objects have fallen into product;
  - If product does not operate normally by following the operating instructions;
  - If the product has been dropped or damaged in any way;
  - When the product exhibits a distinct change in performance.

If you have any questions regarding the service or repair of this machine, call or write to the appropriate repair center location (see "Snap-on Service Center Locations page 19).

Technical questions can be directed to our toll free number at 1-877-765-7665 Monday through Friday 6:30 am to 5:00 pm Central Time (U.S. customers only).

## Specific Safety Information

### ▲ WARNING:

Read this operator's manual carefully before using. Failure to understand and follow the contents of this manual may result in electrical shock, fire and/or severe personal injury.

#### FCC Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

NOTE! This equipment has been tested and found to comply with the limits for Class A digital devices, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Consult the dealer for help.

Use of shielded cable is required to comply with Class A limits in Subpart B of Part 15 of the FCC rules.

Do not make any changes or modifications to the equipment.

This device complies with Part 15 of the FCC Rules and with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including reference that may cause undesired operation. Note: Changes

or modification not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This Class A digital device complies with Canadian ICES-003.

#### Video Scope Safety

- Do not place tool into anything or anywhere that may contain a live electrical charge.
- FOR WALLS: For inspecting inside walls, be sure to shut off the circuit breaker to the whole house before using the tool behind any of the walls
- FOR PIPES: If you suspect a metal pipe could contain an electrical charge, have a qualified electrician check the pipe before using the tool. Ground circuits, in some cases, can be returned to cast iron pipes and cause them to be charged.
- FOR AUTOMOBILES/HEAVY EQUIPMENT/MOTORSPORTS: Be sure the automobile, heavy equipment or motorsport equipment is not running during inspection. Metal and liquid under the hood may be hot. Do not get oil or gas on the imager head. Exposure to petroleum-based substances will eventually degrade the imager head covering.
- GENERAL USE: Do not use anywhere the unit may come into exposure with hazardous chemicals, electrical charges or moving parts. Such situations may result in serious injury or death.

SAVE THESE INSTRUCTIONS!

### Getting Started

#### Description

The BK8000 video scope displays live color video from an imaging sensor and lighting source connected to a flexible dual view imager cable. The unit is capable of capturing still images and full-motion video, along with audio. It can be used to look into tight spots and beam back real-time video to a color LCD. The magnet accessory is included to attach to the imager head to provide application flexibility.

#### Specifications

**Total Weight**.....1lb 10oz (800g)

#### DISPLAY UNIT:

Power Supply..... Internal Li-Ion Battery, 3.7V, 2600 mAh  
 Charge time ..... 5 hours  
 Charger Input..... 5V DC, 1. Amp  
 Length ..... 1.77" (45mm)  
 Width ..... 7.2" (180mm)  
 Height..... 3.94" (100mm)  
 Built-in Camera..... 3 megapixels, fixed focus  
 Screen Resolution..... 480 x 272 RGB with LED backlight  
 4.3" (10.92 cm) Color Touchscreen LCD  
 Audio Input..... Built-in Microphone  
 Audio Output..... Built-in Speaker  
 Video Out..... NTSC  
 Run-time on battery ..... 4 hours (approximately)  
 Wireless interface ..... Wi-Fi - 802.11n  
 Wireless range ..... 33 ft (10m)  
 Operating Temperature..... 32°F to 104°F (0°C to 60°C)  
 (Batteries will not charge above 113°F (45°C))  
 Storage Temperature ..... 14°F to 122°F (-20°C to 60°C )  
 59°F (15°C) is ideal for maximum battery life.  
 Relative Humidity..... 5% to 90% non-condensing

#### IMAGER HANDLE:

Power Supply..... Internal Li-Ion Battery, 3.7V  
 Charge time ..... 5 hours  
 Charger Input..... 5V DC, 1.Amp  
 Run-time on battery ..... 4 hours (approximately)  
 Wireless interface ..... Wi-Fi - 802.11n  
 Wireless range ..... 10m (33 ft)  
 Operating Temperature..... 32°F to 104°F (0°C to 60°C)  
 (Batteries will not charge above 113°F (45°C))  
 Storage Temperature ..... 14°F to 122°F (-20°C to 60°C )  
 59°F (15°C) is ideal for maximum battery life.  
 Relative Humidity ..... 5% to 90% non-condensing  
 Length ..... 1.77" (45mm)  
 Width ..... 3.07" (78mm)  
 Height..... 6" (152mm)

#### IMAGER:

Length ..... 36 in (0.91m) Dual View  
 Wireless Reception Range ..... 33 feet (10m) (unobstructed line-of-sight distance)  
 Forward Camera/Side Camera  
 Field of View ..... approximately 52° diagonal  
 Optimal Focal Range ..... 0.5' to 12" (12cm to 30.5cm)  
 Resolution..... 640 x 480  
 Operating Temperature..... 32°F to 104°F (0°C to 60°C)  
 Storage Temperature ..... 14°F to 122°F (-20°C to 60°C)  
 Relative Humidity ..... 5% to 90% non-condensing  
 Water Resistance ..... Imager to 10' (3m) water depth (when assembled)

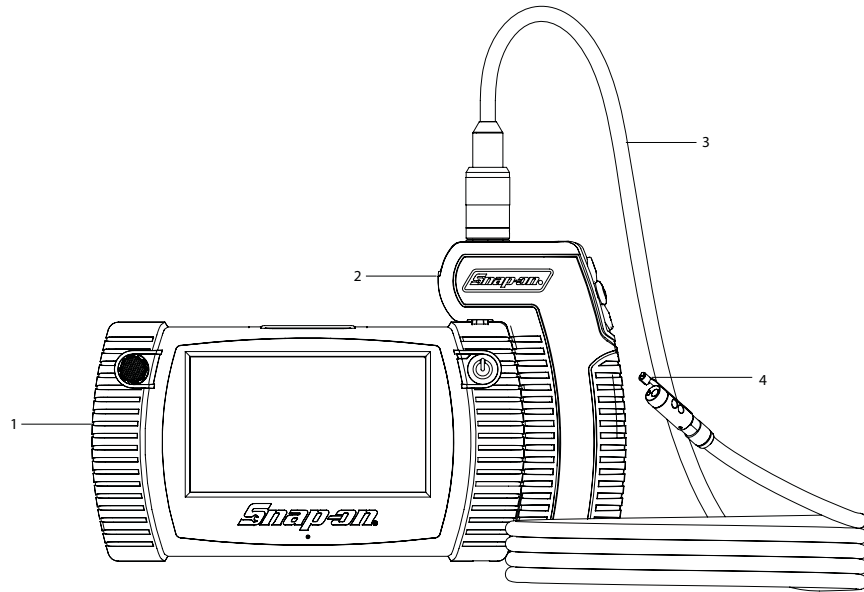
#### A/C Power Supply:

Charge Time: ..... 5 hours  
 Charger Input:..... 5V DC, 1A  
 Input Voltage..... 100-240VAC, 50-60Hz 0.6Amp  
 Maximum inrush current ..... 30A @ 115VAC, 60A @ 230VAC  
 Output voltage ..... 5V DC 2.6Amp Max  
 No Load Standby power ..... <0.3W  
 Operating Temperature..... 32°F to 104°F (0°C to 40°C)  
 Storage Temperature ..... 14°F to 167°F (-10°C to 75°C)  
 Relative Humidity ..... 20% to 80% non-condensing

**NOTE! The charger and internal batteries are not compatible with any other Snap-on Li-Ion Batteries and chargers.**

**Standard Equipment**

The Digital Wireless Video Scope comes with the following items (Figure 1):



**FIGURE 1: System Components**

Key	Stock Number	Description
1,2	BK8000	Viewer unit and Imager handle
3	BK8000-1	36" long, 8.5mm diameter 9-pin dual view imager
4	BK8000-3	Magnet retrieval tool
-	BK5500-8	Video out cable
-	BK6000-12	USB Cable
-	BK8000-2	Blow molded case
-	BK8000-4	External power supply
-	ZBK8000	Manual

**BK8000/A/C Power Supply Inspection and Set-Up**

**⚠ WARNING:**



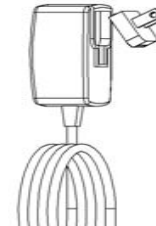
Always wear eye protection to protect your eyes against dirt and other foreign objects. Follow operating instructions to reduce the risk of injury from electrical shock.

Daily, before use, inspect the BK8000 and A/C Power Supply and correct any problems. Set up charger according to these procedures to reduce the risk of injury from electrical shock, fire, and other causes and prevent tool and system damage.

Before using the BK8000 for the first time, allow it charge for at least 5 hours to ensure that the batteries are fully charged.

**Assembling the Charger**

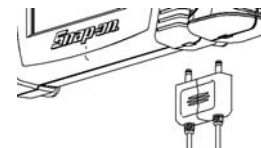
The charger is supplied with a selection of adaptors for use in multiple countries. Before first use, select the appropriate adaptor for your country and attach it to the charger (Figure 2).



**Figure 2: Assembling the Charger**

**Charging the BK8000**

1. Nest the Viewer Unit and Imager Handle together and insert the power supply cable as shown (Figure 3):



**Figure 3: Charging the BK8000**

2. Ensure that the correct adapter is fitted into the charger and insert the charger into a suitable power output. The LEDs on the Viewer and Imager Handle will indicate the charging status as follows:

CHARGE STATUS	LED STATUS
Not Charging	LED is OFF
Pre-Charge	LED is Amber
Charging	LED is Red
Fully Charged	LED is Green

Note: The BK8000 will only charge the batteries if the temperature is between 0°C and 45°C (32°F and 113°F). Outside of this temperature range the BK8000 may continue to operate but the batteries will not charge and the Charge Status LED will be off.

1. Make sure the charger is unplugged. Inspect the power cord, charger and battery for damage or modifications, or broken, worn, missing, misaligned or binding parts. If any problems are found, do not use charger until the parts have been repaired or replaced.
2. Clean any oil, grease or dirt from the equipment as described in the Maintenance section, especially handles and controls. This helps prevent the equipment from slipping from your grip and allows proper ventilation.
3. Check to see that all warning labels and decals on the BK8000 and A/C Power Supply are intact and readable.
4. Select the appropriate location for the A/C Power Supply before use. Check work area for:
  - Adequate lighting.
  - Flammable liquids, vapors or dust that may ignite. If present, do not work in area until sources have been identified and corrected. The charger is not explosion proof and can cause sparks.
  - Do not use the device in wet or damp areas.
5. With dry hands, plug charger into the appropriate power source.
6. When the battery is fully charged, the red LED is replaced by a green LED.
  - Once the battery is charged, it may remain plugged into the charger until it is ready to be used. There is no risk of over-charging the battery. When the battery has been fully charged, the charger automatically switches

to retention charging. If the unit is on while charging, the LED indicators on the battery will not display a fully charged battery until the unit is turned off.

7. With dry hands, unplug charger from outlet once charging completes.

**Cleaning Instructions**

**▲ WARNING:**

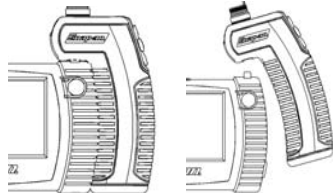
Unplug charger before cleaning. Do not use any water or chemicals to clean charger or batteries to reduce the risk of electrical shock.

1. If present, remove charger from the unit.
2. Remove any dirt or grease from the exterior of the charger and battery pack with a cloth or soft non-metallic brush.

**Assembly**

NOTICE: Be sure to read Battery Precautions section page 3.

The BK8000 has two main components; the Viewer and the Imager Handle (Figure 4).



**Figure 4: Viewer Unit and Imager Handle**

The Viewer and Imager Handle nest together for storage, transportation and charging using a unique locking feature. To disconnect the Imager Handle from the Viewer, pull the bottom of the Imager Handle away from the Viewer and lift upwards.

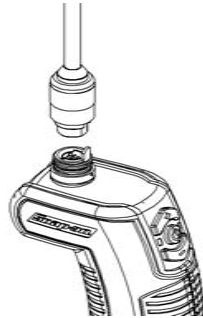
To nest, engage the locking feature at the top of the Imager Handle with the Viewer case and rotate the bottom of the Imager Handle towards the Viewer, the magnet will hold the two securely together.

The Imager Handle and imager are supplied assembled. Should the user wish to use a different imager, the imager can be removed by unscrewing the imager connector in the direction indicated by the engraved arrow and the word remove.

**To Connect the Imager to the Imager Handle**

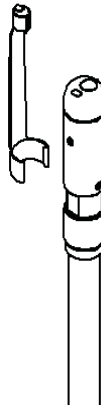
To assemble a new imager to the Imager Handle,

first align the tab on the Imager Handle with the slot on the imager and mate the connectors (Figure 5). Finger-tighten the connector nut to secure the pieces. Do not use tools to tighten the connector nut. Note: BK8000 is not compatible with the BK5500 and BK6000 Push-Fit style imagers.



**Figure 5: Connecting the Imager to the Imager Handle**

**To Install the Magnet Retrieval Accessory:** The unit is supplied with a magnet retrieval accessory for retrieving small ferrous objects from difficult to reach places (Figure 6). The accessory is attached to the imager head by aligning the opening on the accessory with the flats on the imager head and pushing in-place. Rotating the accessory 90° locks it in place. To remove, rotate the accessory until the clip opening aligns with the flats on the imager and pull to remove.



**Figure 6: Installing Magnet**

**Tool and Work Area Set-Up**

**▲ WARNING:**

To prevent serious injury, proper set-up of the tool and work area is required. The following procedures should be followed:

1. Review General Safety Information section of this manual (see page 3).
2. Check work area for: adequate lighting, flammable liquids, vapors or dust that may ignite.
3. Follow tool set-up according to specific tool operator's manual.

**Operating Instructions**

**▲ CAUTION:** Do not use excessive force to insert or bend the cable.

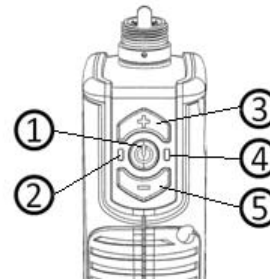
**▲ CAUTION:** Do not use the cable or imager head to modify surroundings, clear pathways or clogged areas, or as anything other than an inspection device.

**▲ CAUTION:**

The viewer unit is not water resistant. The imager head and its covering are water resistant, but are not acid-proof or fireproof. Petroleum-based products will ruin the imager cable's protective plastic covering over time. Avoid submersing the imager head into corrosive, oily places.

**Using the Imager**

To display images from the Imager Handle on the viewing unit, both units must be turned on. If using the Viewer to view or edit images, there is no need to switch on the Imager Handle. (Figures 7 and 8).

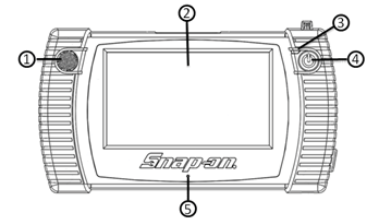


**Figure 7: Using the Viewer Handle**

1. Power /Capture Button
2. Power ON Indicator
3. Increase Imager LED brightness
4. Charge Status Indicator
5. Decrease Imager LED brightness

First, ensure that the imager camera is correctly attached to the Imager Handle (see Assembly instructions). The Imager Handle is switched on and off by pressing and holding the ON / Capture button for greater than 2 seconds – the Green ON LED will illuminate when the unit is powered on.

For viewing in reduced light conditions, the imager camera includes a high-power LED for illuminating objects. Adjust the LED light output for optimum viewing conditions by using the LED + and LED – buttons on the Imager Handle. Note that the buttons will auto-repeat if held for greater than half a second.



**Figure 8: Using the Viewer Unit**

1. Speaker
2. Touch Screen Display
3. Charge Status Indicator
4. Power Button
5. Microphone

To conserve batteries, the Imager Handle will automatically switch off 20 minutes after the last button press. The current status of the Imager Handle battery is displayed on the Viewer Unit display.

**Using the Viewer Unit**


The Viewer unit performs a number of functions:

- Display and capture live images from the Imager Handle as stills or video
- Display and capture still images from the built-in rear camera.
- Select the video source on the supplied Dual View Imager camera (front or side)

- Play-back captured images and video
- Audio and textual annotation of still pictures (video file naming)
- Delete stored files

**Using the Display Unit Rear Camera**


The rear camera is used to capture high-resolution (3 megapixels) still images. Pictures are best taken when the object to be photographed is evenly lit from the front. The system will not save a picture if there is insufficient memory available.

Select the Rear Camera as the image source, (the Display Unit will default to Still Image capture mode), point the camera at the object to be photographed and press the  icon.

**Taking still pictures and videos with the Imager Handle**

The BK8000 can store video and still images using the Imager Handle as the source. Pictures and video are captured and stored at a resolution of 640 x 480 ppi. The original image is stored, the digital zoom function will have no affect on the stored image.



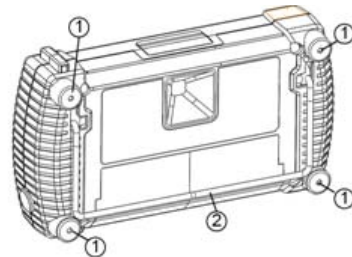
If using an imager with a dual camera, select the Forward facing or Side facing camera then select the Video capture or Still photograph mode. To take a picture or start / stop a video (depending on mode), briefly press the ON / Capture button on the Imager Handle. When taking a still picture, the Display Unit will beep and pause the live screen image briefly to indicate that the picture has been stored successfully. When taking a video, the display unit will beep and display the  icon to indicate that the video has started; when stopping the video the Display Unit will beep and pause the live video display briefly. The length of video captured is displayed. (Figure 9)



**Figure 9: Imager and Camera Icons**

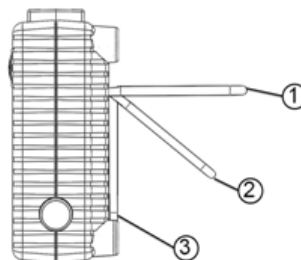
**Using the kickstand and magnet**

The kickstand has 3 positions to allow the user to place the BK8000 at the optimum angle for viewing and operating the BK8000 Viewer. In addition to the kickstand, the BK8000 Viewer unit has 4 magnets located on the rear of the unit that will hold the unit securely in place on a flat, ferrous surface such as the side of a tool cabinet or car body panel. (Figure 10 and 11)



**Figure 10: Using the Magnet and Kickstand**

1. Magnets
2. Kickstand in Closed Position



**Figure 11: Using the Kickstand**

1. Kickstand at 90°
2. Kickstand at 45°
3. Kickstand in Closed Position

**Typical Applications**

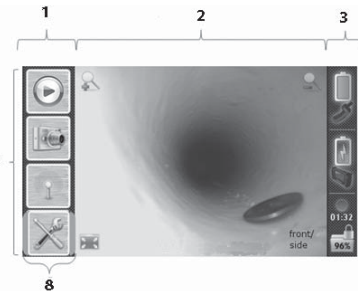
The Snap-on Video Scope is designed as a remote inspection device. Typical applications may include automotive inspection, boat/aircraft inspection, etc. It can be used for valve, cylinder bore, HVAC and a rear-differential inspection, just to name a few.

**User Button Interface**

The Touch Screen and display (Figure 12) is divided into 3 main areas:

- Status Display
- Image Display
- Function Select

The touch screen is designed to be operated by light finger pressure – do not use any other object to operate the touchscreen.



**Figure 12: Touch Screen Display**

1. Function Select
2. Image Display
3. Status Display
4. Imager Battery Status
5. Viewer Battery Status
6. Record Time
7. Memory Status
8. Pop-Out Indicator

**Battery Status Display**

The status display provides an overview of the system status to the user. The Battery Icon indicates the remaining charge in battery (Figure 13). The icon changes to indicate the user that the battery is charging.



Battery Charging



Battery Full



Battery Empty

**Figure 13: Battery Status Icons**

**Record Time**



The record time indicator indicates that the BK8000 is recording video or audio and the length of the recording.

**Memory Status**



The available memory space in the BK8000 internal memory or an inserted Micro SD memory card is shown as a percentage of the original size.

The actual number of still pictures or video recording time remaining will vary according to the size of memory device and mix of files stored. The displayed icon changes to indicate that an SD card is inserted.

**Image Display**

The image is normally displayed in the center section of the screen. Displayed images can be digitally zoomed up to 2 times the original size or expanded to fill the entire screen.



Pressing this icon digitally zooms the image in by 25% each press to a maximum of 200%. Change to correct icons before review



Pressing this icon digitally zooms the image out by 25% each press to a minimum of 100%



Pressing this icon expands the image to fill the entire screen. Tapping the screen anywhere returns to the normal viewing mode.

**Function Select**

Pressing one of the function select buttons will either step into another screen presenting additional functions or will 'pop' out an additional set of buttons allowing the user to quickly select a particular function. Those buttons that 'pop out' can be identified by the additional light grey background surrounding the button as shown:



This button switches to an additional keyboard layout which includes numbers and special characters.



This button exits the keyboard and the user is prompted to confirm or cancel the action.



The back icon is used in various screens to move to the previous screen. The user can always return to the home screen by pressing this button until it is no longer available.

The confirm screen is used in various screens to confirm that the user is sure that the desired function has been selected.



Confirms the action



Cancels the action



The On-Screen keyboard is used when text entry is required such as renaming a file or annotating a picture.

**Mode Selection**

The BK8000 Viewer Unit operates in two distinct modes: Live Mode and Playback Mode. Live mode is used for viewing live images and capturing still pictures and video. Playback mode is used for viewing and editing recorded images and videos.



When in Live mode, pressing the Playback Mode icon selects Playback mode. The Function select buttons will change according to the selected mode.

**Playback Mode**

The user is presented with a thumbnail view showing the files that are available, when entering Playback mode.



If there are too many files to display on one screen, the arrow icons scroll backwards and forwards through the list of files. Select the file to be viewed / edited by pressing the appropriate thumbnail picture. The screen will change to show the still image or first frame of the selected video. The desired operation is selected using the following Function buttons.



**Delete**



If a still image with an audio attachment has been selected, the user is prompted to delete either the audio attachment (if available) or both the audio and picture file; then confirm. If a video file, or still picture with no audio has been selected, then only the complete file may be deleted.



Delete Entire File



Delete just the audio note, the picture is not deleted.

**Edit**



For still pictures, the edit menu allows a user to Rename or Annotate (audio or textual) the picture; for video, only the rename function is available.



Text Annotation (Still pictures only). Allows the user to add a textual annotation to the selected picture. The text is added to the top of the picture as displayed on the screen. Once confirmed, this action cannot be undone and the text cannot be removed.



Rename File. This function allows the user to append additional characters to the name of the video or still file. Note that the following characters are not available to the user for this function: \ / : \* ? " < > |



Audio Annotation (Still pictures only). Records an audio annotation to the selected still picture using the built-in microphone. Recording starts immediately upon selecting.



Select this icon to stop recording. This action is not available if a still picture already has an audio annotation; to record a new annotation, first delete the old one. For best results talk towards the front of the BK8000

Viewer unit in a normal speaking voice approximately 0.6m (2ft) away from the unit. Maximum recording length is one hour.



**Play**

This function is available for both video files and still images with attached audio annotations. Pressing this button will start to play the video or audio file. During playback, a progress bar indicates the current position within the file.



Pause Playback mode



Continue Playback



Stops playback and goes back to the thumbnail view.

**Live Mode**

In live mode an image is displayed from the selected video source. This image can be captured as a still photograph or video file (Imager Handle only) depending on mode.



**Image Source Selection**

If there is no paired Imager Handle detected, and the user confirms, the BK8000 defaults to using the rear camera as the image source, otherwise the following options are available.



Selects the forward looking camera on the imager



Selects the side view camera on the imager. Valid only for dual view imagers



Selects the rear BK8000 Viewer Unit. Note that this camera supports still pictures only.

**MENU**



**Tools Menu**

The BK8000 settings tools are found by pressing the tools button.



## Set Time and Date

The BK8000 uses the time and date to record what time that a still picture or video was captured. After pressing this function the BK8000 presents the user with the Time and Date and an Up and a Down arrow.



Figure 14: Time and Date Icon

Press the data to be edited and use the arrows to change the values.



Press to confirm



Press to cancel

## Format Memory



Micro SD cards and the BK8000 internal memory may require formatting from time to time. Selecting this function and confirming will result in all data being removed from internal memory or micro SD card if present.

## Firmware Version



This function displays the current firmware versions of the BK8000 Viewer unit, Imager Handle and communication module.

## Update Firmware



Firmware updates may be provided pre-loaded onto a micro SD card or supplied electronically by download or email.

## Pairing BK8000 Viewer and Imager Handle



The BK8000 can only work with one Imager Handle at a time. The BK8000 Viewer unit and Imager Handle are shipped to the user as a pair. To use the Viewer unit with a different Imager Handle it must be paired.

Ensure that the Imager Handle that is to be paired is switched on and that the LEDs are visible. The Viewer unit will display a list of all available Imager Handles. Select the desired imager handle from the list. The LEDs on the Imager Handle will blink to confirm pairing.

## Using the BK8000 Expansion Connectors

The BK8000 expansion connectors are located behind a flexible protective cover. To use any of the expansion connectors, first open the cover and follow the instructions below. After use, please replace the protective cover.

### Micro SD socket

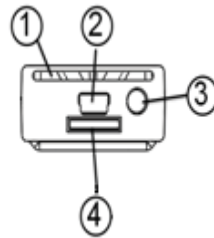


Figure 15: SD Socket

1. Protective Cover
2. USB-mini
3. Video Out
4. Micro SD

The BK8000 will accept a standard Micro SD card (not supplied) for storage of pictures or video. To use, ensure that the BK8000 is switched off and carefully insert the card fully into the BK8000 as shown (Figure 15):

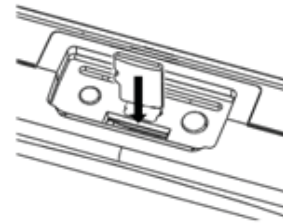


Figure 16: Installing an SD Card

### Video Out

The BK8000 can direct the viewer display to an external NTSC video display. To use this feature, a standard 3.5mm jack plug to RCA plug cable is required. Fully insert the 3.5mm jack plug into the BK8000 video-out connector and connect the phone plug to the desired video display device. Inserting the 3.5mm jack plug disables the BK8000 LCD display and touchscreen.

### Image Transfer to Computer using USB

The BK8000 can be connected to a PC to transfer image and video files using the supplied USB cable; insert the small connector into the BK8000 and the larger end into a computer. Depending on the operating system, the computer may inform the user that a device is attached. The view unit LCD screen will shut off while attached to the computer.

The BK8000 will appear as an external drive to the user allowing pictures and videos to be transferred to and from the BK8000. Note that if a Micro SD card is inserted, only those files on the Micro SD card will be available.

For Still images with audio captions, two files must be transferred to the same folder. These files will have a common filename with the following two extensions: .avi .jpg

Note that the BK8000 will not charge through the USB connector.

## Transportation & Storage

1. Avoid exposing the unit to continuous vibration or extreme hot and cold temperatures.
2. Always store the visual inspection device indoors in the case it came with.
3. Always remove the batteries if the unit will not be used for an extended period of time.

## Maintenance Instructions

**CAUTION:** Make sure the batteries have been removed from the unit before performing maintenance.

The Snap-on visual inspection device has been designed to require little maintenance. However, in order to maintain its performance, you must always follow these guidelines:

1. Always handle the device with care. It is not shock-resistant and should not be banged or dropped. Treat it as you would any other sensitive optical device.
2. Always clean the imager head after use with soap or mild detergent.
3. Use only alcohol swabs to clean the connections.
4. Avoid rubbing too hard on the LCD. After use, wipe the display clean gently with a dry cloth.
5. Do not disassemble this device beyond what is shown in the manual. Doing so will void your warranty.

## Service and Repair

**CAUTION:** Tool should be returned to the Northern Repair Facility for all services. All repairs made by Snap-on service facilities are warranted against defects in material and workmanship.

If you have any questions regarding the service or repair of this machine, please call or write to one of the eight service centers listed on page 95 that is most convenient to your geographic location.

Web site: [buy1.snapon.com/snaponstore/customer.asp](http://buy1.snapon.com/snaponstore/customer.asp)

### User serviceable repair parts

- BK8000-1 36" long, 8.5mm diameter, 9-pin dual view imager
- BK8000-2 Blow Molded Case
- BK8000-3 Magnet Retrieval tool
- BK8000-4 External Power Supply with international adapters
- BK6000-12 USB Cable

**Troubleshooting**

SYMPTOM	POSSIBLE REASON	SOLUTION
Display unit does not display image from imager handle	The imager is not inserted into the imager handle	Connect imager securely to imager handle
	Imager handle not switched on	Switch imager handle on & pair with viewer unit
	Imager handle is not paired with viewer unit	Use Settings Menu to pair imager handle with viewer unit
LCD screen is black, but viewer unit is ON	USB cable is inserted	Remove cable
	Video out cable is inserted	Remove cable
Unit will not switch on	Battery is very low	Charge unit until Green charge LED illuminates.
Battery does not hold a charge	Faulty battery	Return unit to appropriate service center location.
Units will not charge	Power supply is not plugged in.	Connect power supply to AC supply and to BK8000
	Battery is too hot	Allow unit to cool
LED on imager is ON but no image	Broken video signal wire	Test with second imager if available. Return to appropriate service center location
Image on display is frozen	Processor locked up	Cycle power
Image on display is breaking up or jerky	Imager handle out of range of viewer unit	Move imager handle and viewer unit within recommended range of 30 feet (10m)
	Interference on radio	Change channels on other radio devices near by
Charging LEDs flash red/green	Faulty battery	Return unit to appropriate service center location.

**Warranty**

**Limited Two (2) Year Warranty** Snap-on Tools Company (the "Seller") warrants only to the original purchaser that under normal use, care and service, the Equipment (except as otherwise provided herein) shall be free from defects in material and workmanship for two years from the date of original invoice. SELLER'S OBLIGATIONS UNDER THIS WARRANTY ARE LIMITED SOLELY TO THE REPAIR OR, AT SELLER'S OPTION, REPLACEMENT OF EQUIPMENT OR PARTS WHICH TO SELLER'S SATISFACTION ARE DETERMINED TO BE DEFECTIVE AND WHICH ARE NECESSARY IN SELLER'S JUDGMENT, TO RETURN THIS EQUIPMENT TO GOOD OPERATING CONDITION. NO OTHER WARRANTIES, EXPRESS OR IMPLIED OR STATUTORY, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTY OR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, SHALL APPLY AND ALL SUCH WARRANTIES ARE HEREBY EXPRESSLY DISCLAIMED. This warranty does not cover (and separate charges for parts, labor and related expenses shall apply to) any damage to, malfunctioning, in operability or improper operation of the Equipment caused by, resulting from or attributable to (A) abuse, misuse or tampering; (B) alteration, modification or adjustment of the Equipment by other than Seller's authorized representatives; (C) installation, repair or maintenance (other than specified operator maintenance) of the Equipment or related equipment, attachments, peripherals or optional features by other than Seller's authorized representatives; (D) improper or negligent use, application, operation, care, cleaning, storage or handling; (E) fire, water, wind, lightning or other natural causes; (F) adverse environmental conditions, including, without limitation, excessive heat, moisture, corrosive elements, or dust or other air contaminants, radio frequency interference, electric power failure, power line voltages beyond those specified for the Equipment, unusual physical, electrical or electromagnetic stress and/or other condition outside of Seller's environmental specifications; (G) use of Equipment in combination or connection with other equipment, attachments, supplies or consumables not manufactured or supplied by Seller; or (H) failure to comply with any applicable federal, state or local regulation, requirement or specification governing emission analyzers and related supplies or consumables. Repairs or replacements qualifying under this Warranty will be performed on regular business days during Seller's normal working hours within a reasonable time following purchaser's request. All requests for Warranty service must be made during the stated warranty period. This Warranty is nontransferable.

**Snap-on Service Center Locations**

**▲ CAUTION:** If you have any questions regarding the service or repair of this machine, please call or write the most geographically convenient service center listed below:

<p><b>Eastern Repair Center (USA)</b> 6320 Flank Drive Harrisburg, PA 17112 USA Toll Free # - (USA only): (800)-848-5067 Telephone: (717) 652-7914 Fax: (717) 652-7123</p>	<p><b>Snap-on Tools (Australia) Pty Ltd</b> National Distribution Centre Unit 6/110 Station Road PO Box 663 Sven Hills, NSW 1730 Australia Telephone: (61) 2-9837-9100 Fax: (61) 2-9624-2578 email: sota.webmasters@snapon.com</p>
<p><b>Northern Repair Center (USA)</b> 3011 E. RT 176, Dock 8 Crystal Lake, IL 60014 Toll Free # - (USA only): (877) 777-4412 Telephone: (815) 479-6850 Fax: (815) 479-6857</p>	<p><b>Snap-on Tools Singapore PTE, Ltd.</b> 25 Tagore Lane #01-01 Singapore 787602 Telephone: +(65) 6451-5570 Fax: +(65) 6451-5574 email: esale.sg@snapon.com Internet: http://snapon.com.sg</p>
<p><b>Western Repair Center (USA)</b> 3602 Challenger Way Carson City, NV 89706 USA Toll Free # - (USA only): (888) 762-7972 Telephone: (775) 883-8585 Fax: (775) 883-8590</p>	<p><b>Snap-on Tools Japan, K.K.</b> Snap-on, Bahco, and Cartec Also serving Taiwan and Micronesia (Distribution Center and Technical Repair Center) 2-1-6 Shinkiba, Koto-ku, Tokyo, 136-0082 JAPAN Telephone: +81 3 5534 1280 Fax: +81 5534 1284 email: SOJ-INFO@snapon.co.jp OEM, National Accounts, GSA Distribution: +81 3 5534 1300 Industrial: +81 3 5534 1281 BAHCD: +81 3 5534 1301 Technical Repair Center: +81 3 5534 1289</p>
<p><b>UK Repair Centre</b> Snap-on Tools, Ltd. Telford Way, Kettering Northants, NN16 8UN ENGLAND Telephone: 01536 413855 Fax: 01536 410740</p>	<p><b>Snap-on Tools of Canada Repair Center</b> 7403 48th St. S.E. Calgary, Alberta T2C 4H6 CANADA Toll Free #: (866) 824-0525 Telephone: (403) 720-4525 Fax: (403) 720-4524 email: canadianquestions@snapon.com</p>

Snap-on is a trademark of Snap-on Incorporated. © 2011 Snap-on Incorporated. All Rights Reserved. Printed in USA.