

Junior Users Manual



Intruder Junior
Inspector Nick Junior



SUBTECH VISION TECHNOLOGY
DESIGN & MANUFACTURING INC.
For Over 30 Years

Quick Reference Card

IMPORTANT: AC ADAPTERS

DO NOT USE THE WRONG CORD.

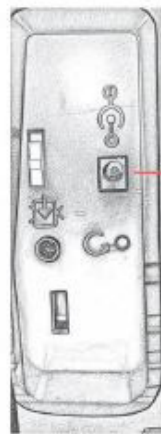
Using the wrong AC adapter **WILL LIKELY CAUSE A COSTLY REPAIR.**

Junior UR): SV | 3A

Standard/ Mini: 12V | 3A

SD CARD REQUIREMENTS: Max 32GB (larger cards will not function). FORMATTING: Must be FAT32. Even new cards may require reformatting via laptop before use. Contact Support for assistance

18 Volt Cord



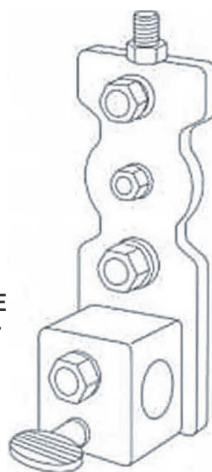
POWER PORT
PLUG IN 18V CORD TO USE BATTERY RECEPTACLE AND CHARGE ON BOARD BATTERY. OR USE 12V AC ADAPTER

18 Volt Receptacle (on cart)



JUNIOR MONITOR BRACKET HARDWARE

MAKE SURE WING NUT IS ON BOTTOM



KEEP THE ORIGINAL BOX. THIS CUSTOM PACKAGING IS REQUIRED FOR SERVICE OR REPAIR. FLATTEN AND STORE THE BOX. REPLACEMENT BOXES ARE DIFFICULT TO OBTAIN



WARNING



WARNING

- Do not modify the unit
- Do not use in explosive atmospheres

CAUTION

- Keep out of reach of children
- Do not look directly into the camera, serious eye damage may occur
- Do not forcibly bend the push rod or use to push objects
- Strong impact on the device may result in breakage of the lens (made of glass) or the push rod
- Do not store device at a temperature below -4° or higher than 140°
- Store in a dry ventilated area
- Keep the device away from acid or alkaline solutions, do not store near gas or oil products
- Do not remove the SD Card while data is being saved to the card, doing so may damage the data and the card
- Turn off the unit after each use, leaving the unit on will drain the battery
- Leaving the WIFI on WILL drain the battery fast
- For best results use the AUTO OFF function to preserve battery life

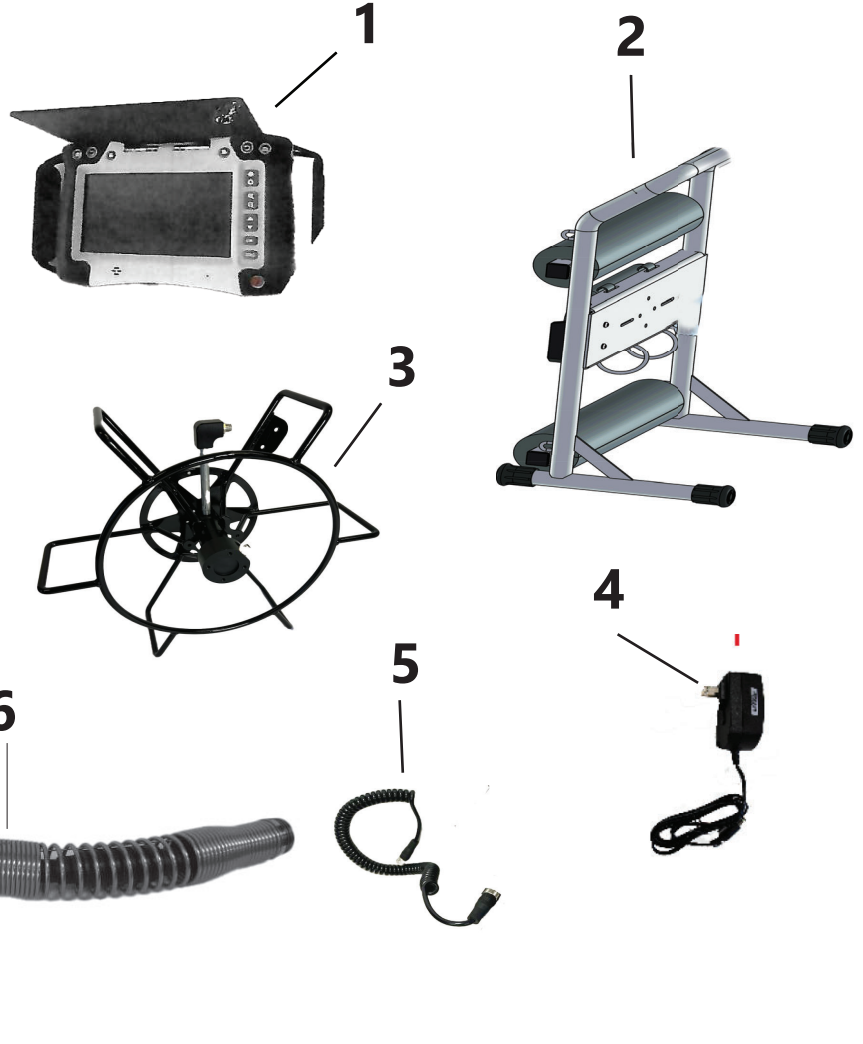
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CONTENTS & ACCESSORIES

STANDARD EQUIPMENT

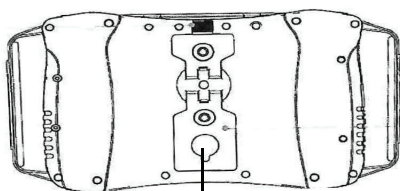
1. Display Unit
2. Cart
3. Reel w/ Hub
4. A /C Charger
5. Interface Cable
6. Self Leveling Camera
7. Skid
8. Hub



PLEASE RECORD YOUR SERIAL NUMBERS

DISPLAY
CAMERA
REEL

Location of serial numbers

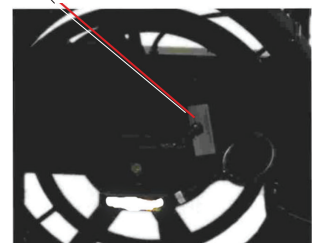


DISPLAY

CAMERA



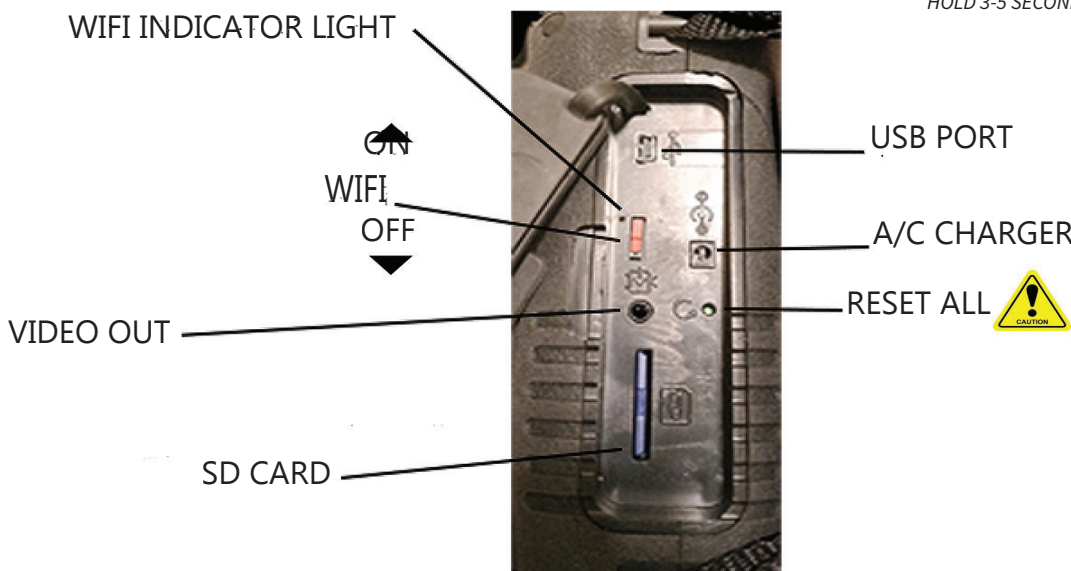
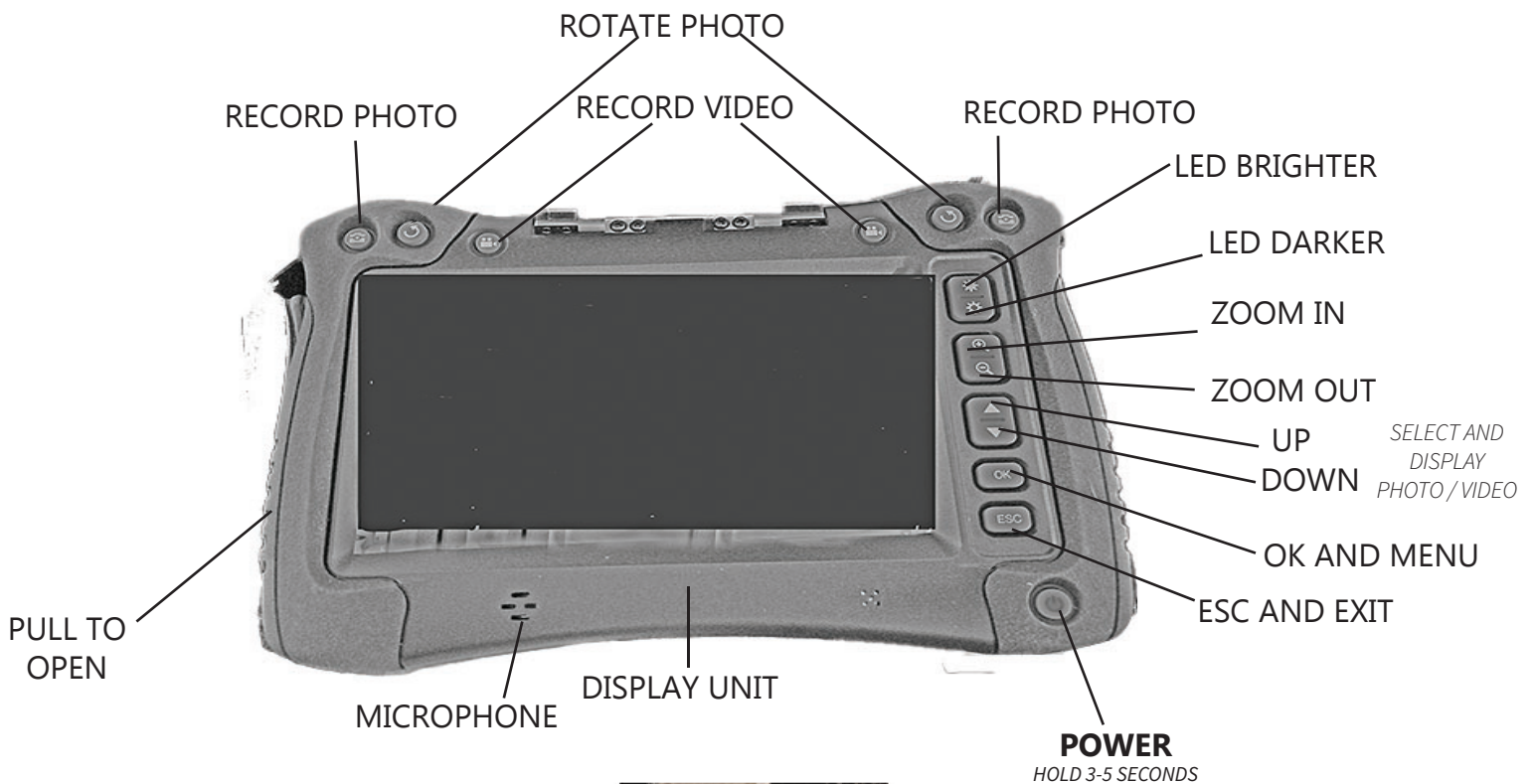
REEL



1. DESCRIPTION

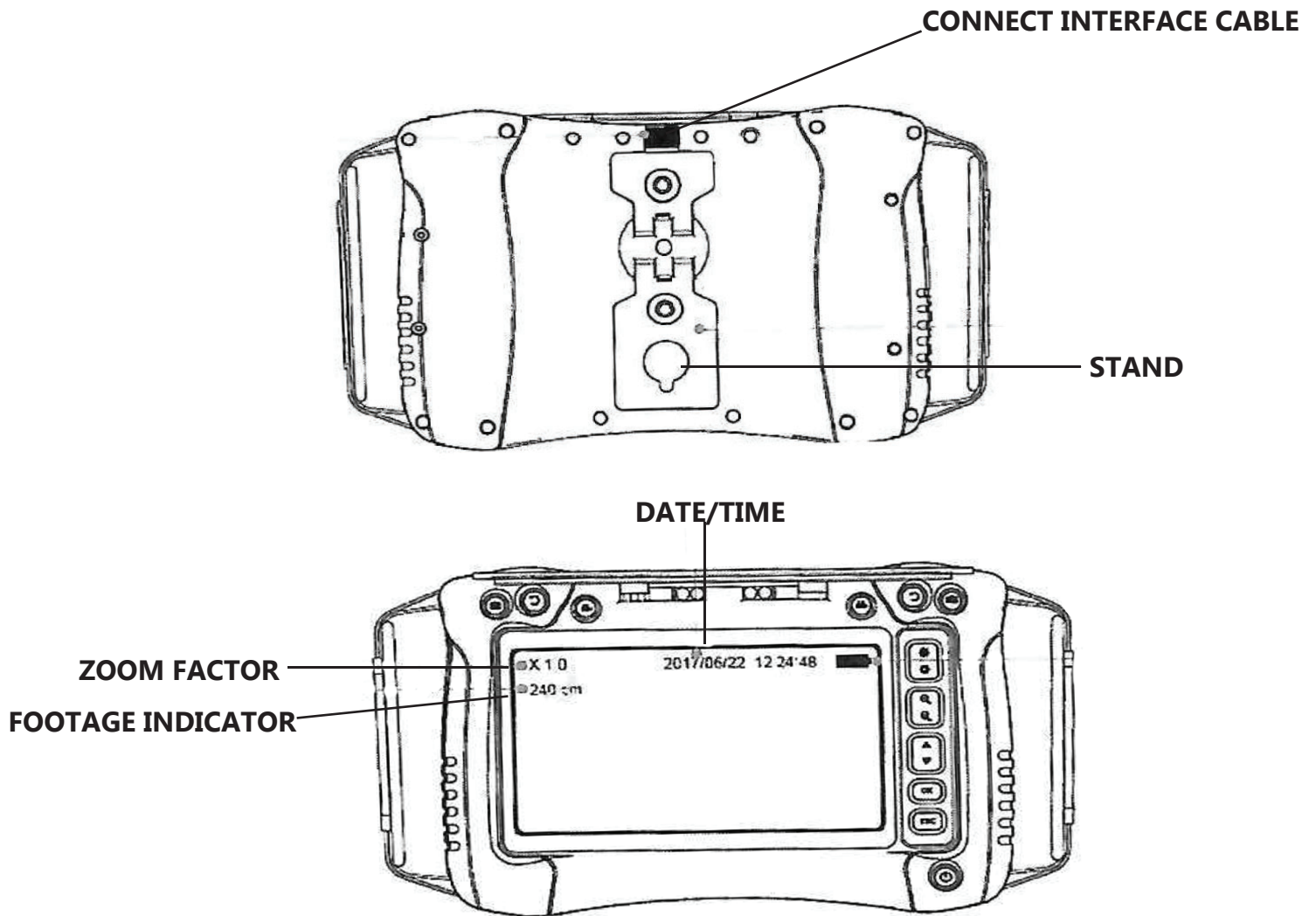
The Junior Display Unit allows the user to view the camera. The unit comes in a sturdy carry/protective case and consists of a wide angle TFT 7" LCD screen. The unit has the ability to view, store and review photos and videos. Images can be displayed directly onto a TV screen or stored and transferred to a PC. The display Unit is charged by LI-Polymer batteries, charger included.

18V Milwaukee battery system option



TURN OFF LCD TO CONSERVE BATTERY LIFE

2. PREPARATION FOR USE



Before use insert SD card as shown in Fig. 1

Insert Interface Cable as shown in Fig. 2, align pins and tighten collar.



FIG. 1

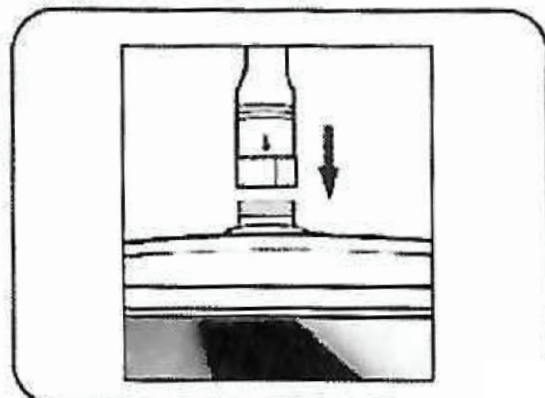


FIG. 2

Press the Power button for 3-5 seconds to turn the display unit on.

The start-up screen is shown briefly followed by the status screen for 5 seconds. **Fig 3**

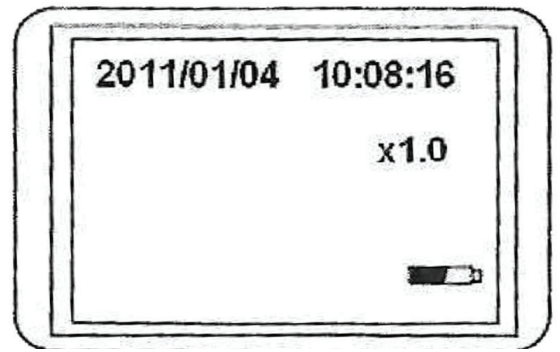


FIGURE 3 STATUS SCREEN

The status screen shows the capacity of the SD card and the internal battery. If the display has been stored for sometime the battery may need to be charged before use.

Use the power adapter to recharge the battery. Suggested 3-5 hours to fully charge.

A live image can be seen after the unit turns on, this is camera mode. It is strongly advised to properly setup the display before first use. Such as, Date and Time. The indexing of photos and video is based on the date and time only. Press the Power button. for 3-5 seconds to turn off.

3. MENU SETUP

- Switch the unit on. Ensure the status screen shows up briefly and clock is running.
- Press the OK button to access the menus. Use the UP or DOWN button to select the menu item.
- Press OK to confirm.

THE OPTIONS DISPLAYED IN THE MENU ARE AS FOLLOWS;

- DELETE ALL
- VIDEO OUTPUT
- DATE / TIME SETUP
- LANGUAGE
- VIDEO FORMAT
- AUTO POWER OFF
- LOCATOR TX
- LENGTH MEASURE
- TEXT ANNOTATION

Delete All

This option deletes all images and video from the SD card
So be careful.

Navigate to DELETE ALL on the menu, press the OK button.
Select YES or NO using the UP or DOWN buttons. Confirm
with the OK button.

4. VIDEO OUTPUT

This function allows live shots, recorded photos and videos to be displayed to TV screen. First make sure that the Video format is set correctly to the TV system in use, (PAL or NTSC, in the menu setup section).

Connect the scope video cable to the display unit 1V video out
Press the OK button to select menu options, select Video Output and press the OK button.

The scope unit screen will turn black and the display will switch to the TV. You can switch the screen back to the display by selecting the same Video Format Menu.

Press the PHOTO button to increase the value and the REC button to decrease the value. The date and time can be displayed in the preview image mode. Use either the REC or PHOTO button to toggle between display "ON and OFF" Confirm selection and exit menu by pressing OK.

DATE / TIME SETUP

Press the Up/Down button to select Year, Month, Day or Hours, Minutes, Seconds.
Press OK and ESC to exit.

LANGUAGE

Navigate to LANGUAGE in the menu, press the OK button. Select the desired language using the UP & DOWN buttons and confirm with the OK button.

MENU
DELETE ALL
VIDEO OUTPUT
DATE/TIME SETUP
LANGUAGE
VIDEO FORMAT

TIME / DATE
2009/01/01
10:22:22
DISPLAY OFF

MENU
DELETE ALL
VIDEO OUTPUT
DATE/TIME SETUP
LANGUAGE
VIDEO FORM

AUTO POWER OFF

Navigate to AUTO POWER OFF in the menu, press the OK button. Select the desired Auto power off time (5,15,30 minutes or DISABLE) using the UP DOWN buttons, confirm with the OK button.

MENU
VIDEO OUTPUT
DATE / TIME SETUP
LANGUAGE
VIDEO FORMAT
AUTO POWER OFF

LOCATOR TX

Navigate to the MENU go to TX and press the OK button to confirm. The transmitter is now active for 512HZ, there is an indicator on the screen.

MENU
DATE / TIME SETUP
LANGUAGE
VIDEO FORMAT
AUTO POWER OFF
LOCATOR TX

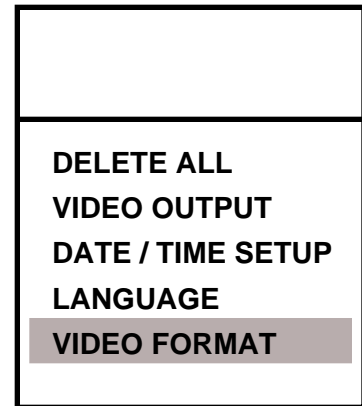
LOCATOR TX
TX OFF
TX ON

5A. MONITOR COLOR ADJUSTMENT

The monitor color can be adjusted to the user's preference. Any color changes made on the monitor will also affect recorded photos and videos.

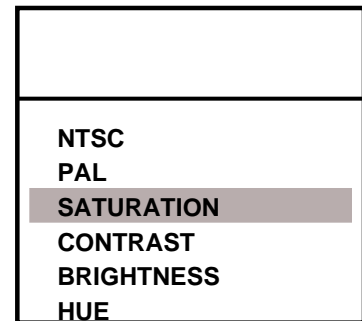
ACCESS THE MENU

Press OK. Arrow down to VIDEO FORMAT.
Press OK again.



ENTER PROGRAMMING MODE

With the cursor on NTSC, press the Screenshot button.



FIRST ADJUSTMENT - SATURATION

Navigate to SATURATION. Change the value to 250. Press OK to save, then press ESC to exit. Check if the color improves.

FURTHER ADJUSTMENTS

If needed, adjust CONTRAST and BRIGHTNESS up or down from 100. This is mid-range, not maximum. HUE may be adjusted slightly negative if needed.

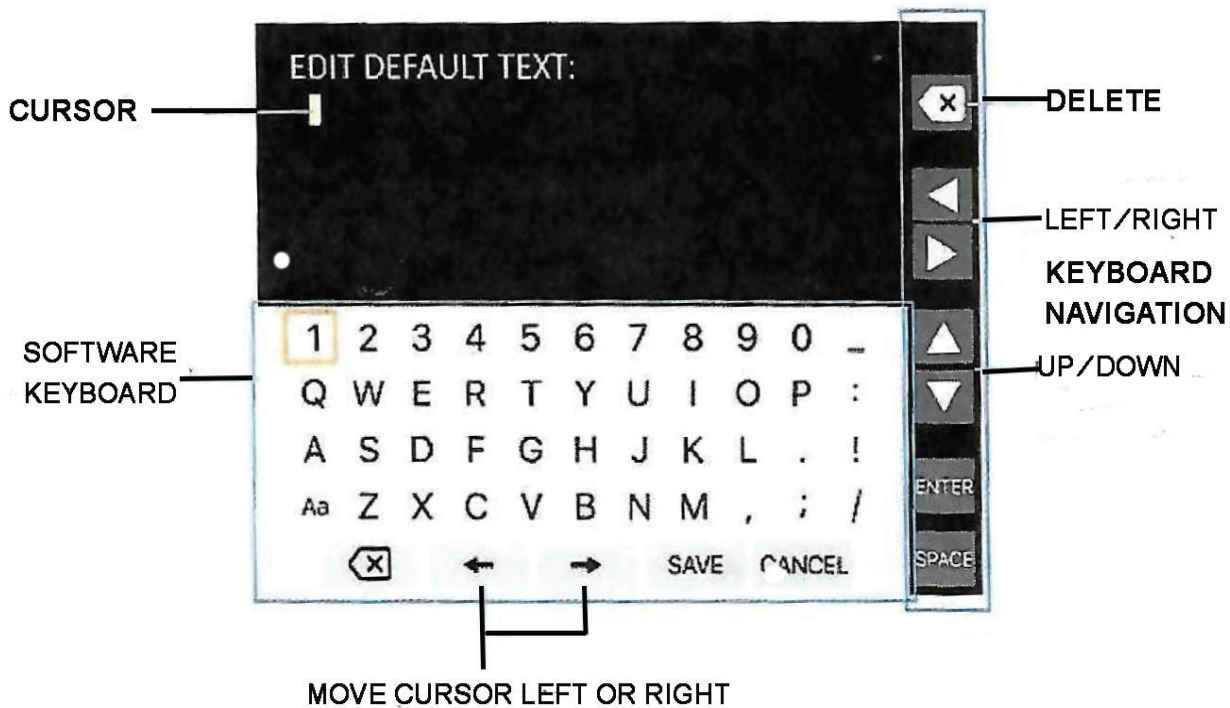
NOTE

Settings can go above 100 and into negative ranges. Adjust one setting at a time so the change can be checked before changing another setting.

5. TEXT ANNOTATION

Navigate to TEXT ANNOTATION in the menu, press the OK button. Select and press EDIT TEXT to bring up the software keyboard and EDIT TEXT window. Move the orange square to the letter, number or symbol to select what you want. To key in, press the ENTER button to confirm. When finished select the save button, or long press the ENTER button for 3-4 seconds to save the entered text.

MENU	TEXT ANNOTATION
LANGUAGE	EDIT TEXT
VIDEO FORMAT	HD SCOPE
AUTO POWER OFF	TEXT COLOR
INPUT SOURCE	ON/OFF
TEXT ANNOTATION	

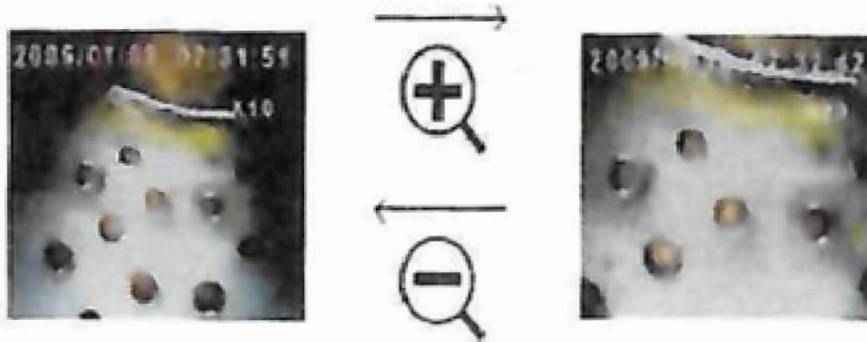


When selecting TEXT COLOR and pressing OK, user can choose either green, yellow or white as the color.

When selecting ON /OFF and selecting OK, user can choose to enable or disable the TEXT Annotation function.

6. DIGITAL ZOOM


The picture in preview mode can be modified by pressing the ZOOM in button and ZOOM out button for back to normal.



7. LED ADJUSTMENT

The LED brightness button is located on the buttons to the right of the screen. User is able to adjust the LED camera lights to suit conditions. The top button increases brightness while the bottom button dims the LED's.

8. IMAGE ROTATION

When pressing the  button the image will be rotated 90°, each successive push of the button will rotate the image 90°.

9. SNAPSHOT AND RECORDING

SNAPSHOT

In Camera mode press the PHOTO button to take a photo. The photo is saved to the SD card with the .JPG format with the file name in running order.

For example "IMG0001.JPG". Users can capture the picture they want during the video recording AND replay by pushing the PHOTO button. "

RECORDING

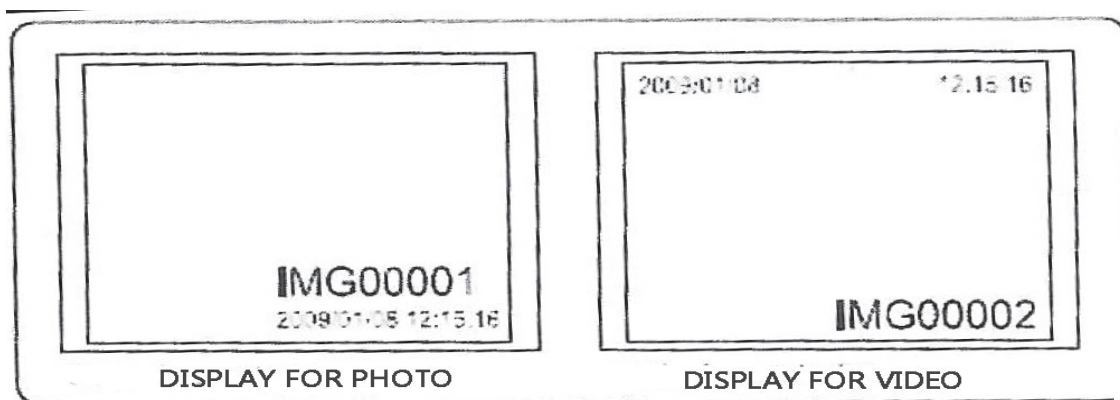
In Camera mode, press the REC button to take a video. The video icon is shown in the top right corner. To stop recording press the REC button again. The video icon disappears. The display reverts to preview mode. The video is automatically stored to the SD card in ASF format with the file name in running order. For example "IMG0001.ASF".

SNAPSHOT WHILE RECORDING

SWR function allows users to take a photo snapshot while recording, or playing back video, so you never miss an important shot.

10. FILE MODE

In the camera mode, press the UP or DOWN button, the last photo will be displayed. Press the UP or DOWN buttons to navigate to the photo or video to be viewed.

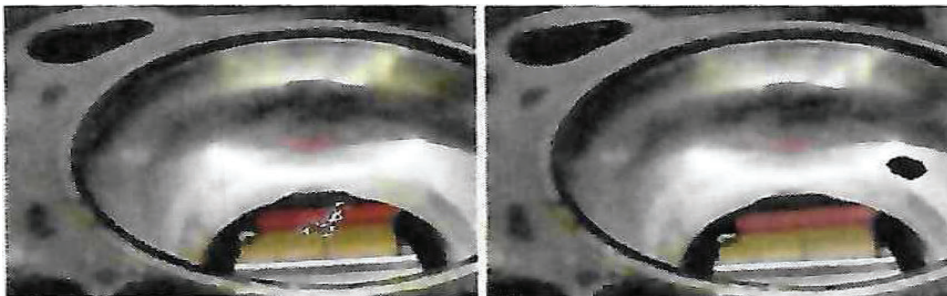


To play selected video press the REC button. To revert to preview mode, press the ESC button. To delete a saved photo, press the OK button while it is displayed. To delete a saved video, make sure the video is not in play mode, press the OK button, a delete menu will show. Toggle between the YES and NO options using the UP DOWN buttons. Press the OK button to confirm.

11. PHOTO COMPARE FUNCTION

A built-in photo compare function compares two photos on screen at the same time. Allows user to see differences on site without using computer software.

In the surfing menu press **+** to select first photo, press UP/DOWN buttons again to find the second photo and press **-** , to start compare press **⌂** button.



12. TRANSFERRING VIDEOS AND PHOTOS TO A PC

The computer must be running MS Windows 2000™ or later. Turn the unit on, connect the USB cable to the display unit and to the computer. Look for the drive with the SD card files, this should look similar to the following figure:

12A. UPLOADING VIDEOS TO YOUTUBE

Videos recorded on the Junior system can be transferred from the SD card to a computer and uploaded to YouTube. Most videos are saved as .ASF or .WMV files.

UPLOAD STEPS

- Remove the SD card from the sewer camera.
- Insert the SD card into a computer using a card reader if needed.
- Open the SD card folder and locate the video file.
- Go to YouTube and sign into the Google account being used for the upload.
- Choose Upload, then drag and drop the video file into the upload window.
- Enter a title and description, then select the correct visibility option.

PREVIEW BEFORE MAKING PUBLIC

Set the video to Unlisted or Private first if it needs to be reviewed before customers can see it. After review, change the visibility to Public in YouTube Studio if needed.

IF THE FILE WILL NOT UPLOAD

- Convert the video to MP4 using a video conversion tool, then upload the MP4 file.
- For Mac users, uploading directly to YouTube is usually the simplest option because macOS may not preview .ASF or .WMV files easily.

NOTE

Do not remove the SD card while video is being saved. This may damage the file or the card.



The files can then be transferred and viewed on a media player. JPG and ASF files should display without any special software.

13. TROUBLESHOOTING

- **No image on screen after powering on?**

Battery is exhausted, connect the unit to the supplied AC adapter and connect to charge the battery. The unit can be operated while on AC power.

- **No image, only words on the LCD display after turning power on.**

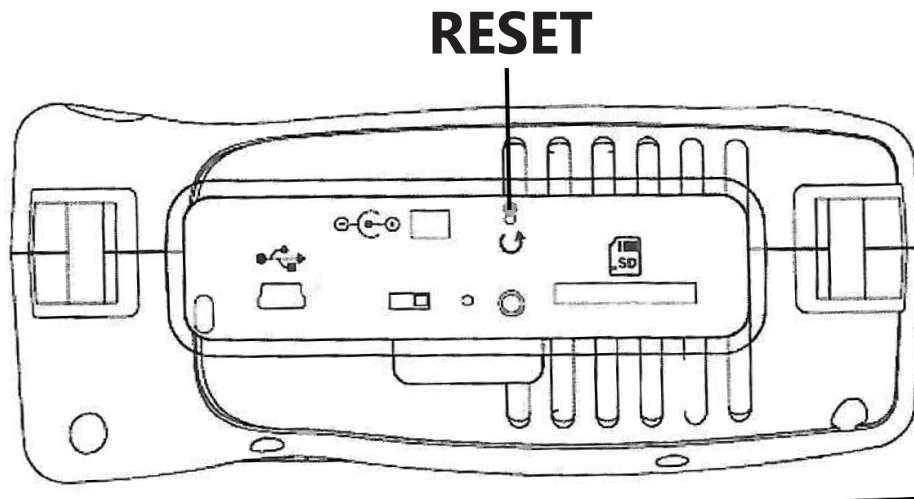
Check that the INTERFACE CORD is securely attached to the Display and at the cart side.

- **Unable to take photos or record video?**

SD card is not present or improperly inserted, full or faulty. Be sure it clicks into place. Check that SD card is present and not full and works in other devices.

- **How to reset the unit?**

If all functions freeze or fail, insert an insulated needle or dull ended object into the hole in the left side of the Display unit. Hold for 3-5 seconds and release. The system will restart automatically.



14. TECHNICAL DATA

Power Adapter	100~ 240V AC in /5V DC out
Display	7" 720x480 pixels color LCD TFT monitor
Interface	Mini USB 1.1; AV out
Battery (not user serviceable)	Rechargeable Li-Polymer battery 7.6Ah / 3.7V
Video Out Format	NTSC or PAL
Storage	SD card (up to 32GB)
Compression Format	MEPG4
Still Image Storage Format	JPEG (640x480)
Video Recording Format	ASF (640x480)
Working Temp.	-20° to 60°C (-4F to 40°F)
Battery Charging Temp.	0° to 40°C (32° to 104°F)
Recommended Storage Temp.	15° to 25°C (59° to 77°F)
Weight (Display only)	1.3Kg (2.86Lb)

15. REMOVAL OF REEL

Remove the push cable from the connector. Loosen the collar on the connector and pull the connector and the cable apart, being careful not to damage the pins. **FIG. 8**

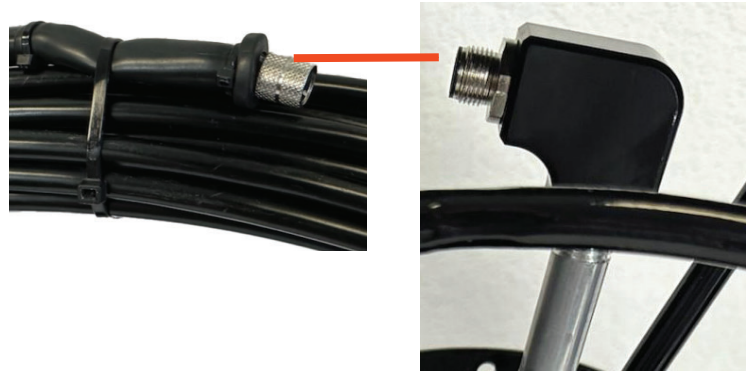


Fig. 8

Remove the 6 screws in the center of the reel. Carefully pull the reel out while securing the cart. **Fig. 9**

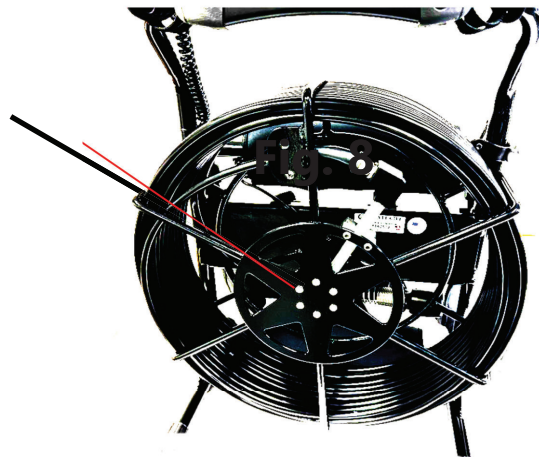


Fig. 9

The cart with reel removed.

Fig. 10

Hub remains attached to cart.
For hub removal see **Fig. 13**



FIG. 10

16. REMOVAL OF HUB FROM CART

Remove the interface cable from the connector on the hub (center of reel), loosen the collar then pull the connector out being careful not to damage any pins. **Fig. 11**



Fig. 11

Remove the push cable from the connector. Loosen the collar on the connector then pull the connector and the cable apart, being careful not to damage the pins. **Fig. 12**

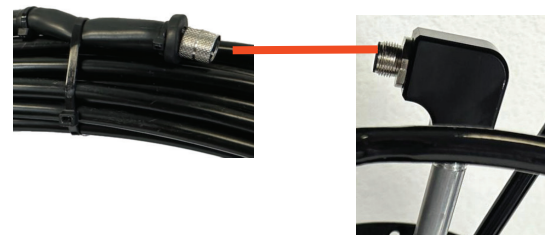
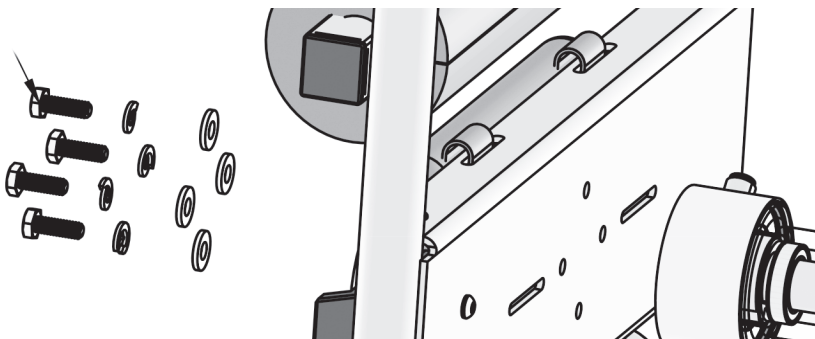


Fig. 12

Remove the 4 bolts from the rear of the cart to remove the hub. **Fig. 13**



ZOOM OF FIG. 13

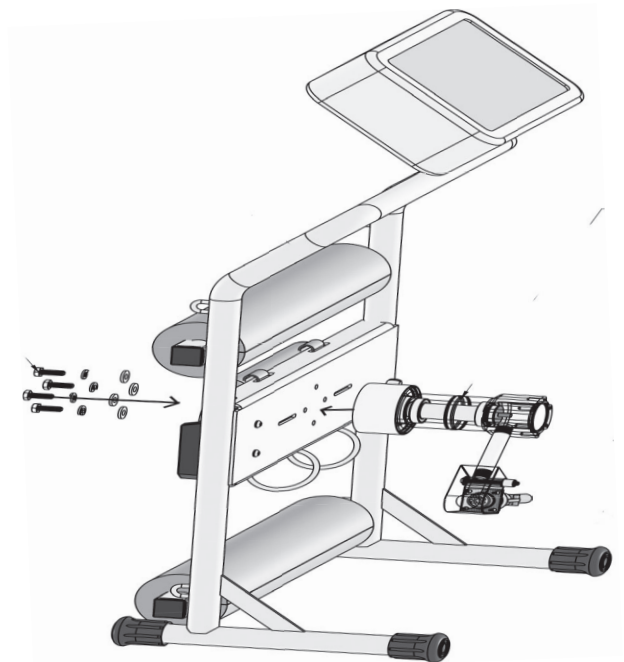


FIG. 13

17. ATTACH REEL

Align the reel over the hub shaft, note cutout in reel. Attach the 6 washers and screws.

Fig. 14

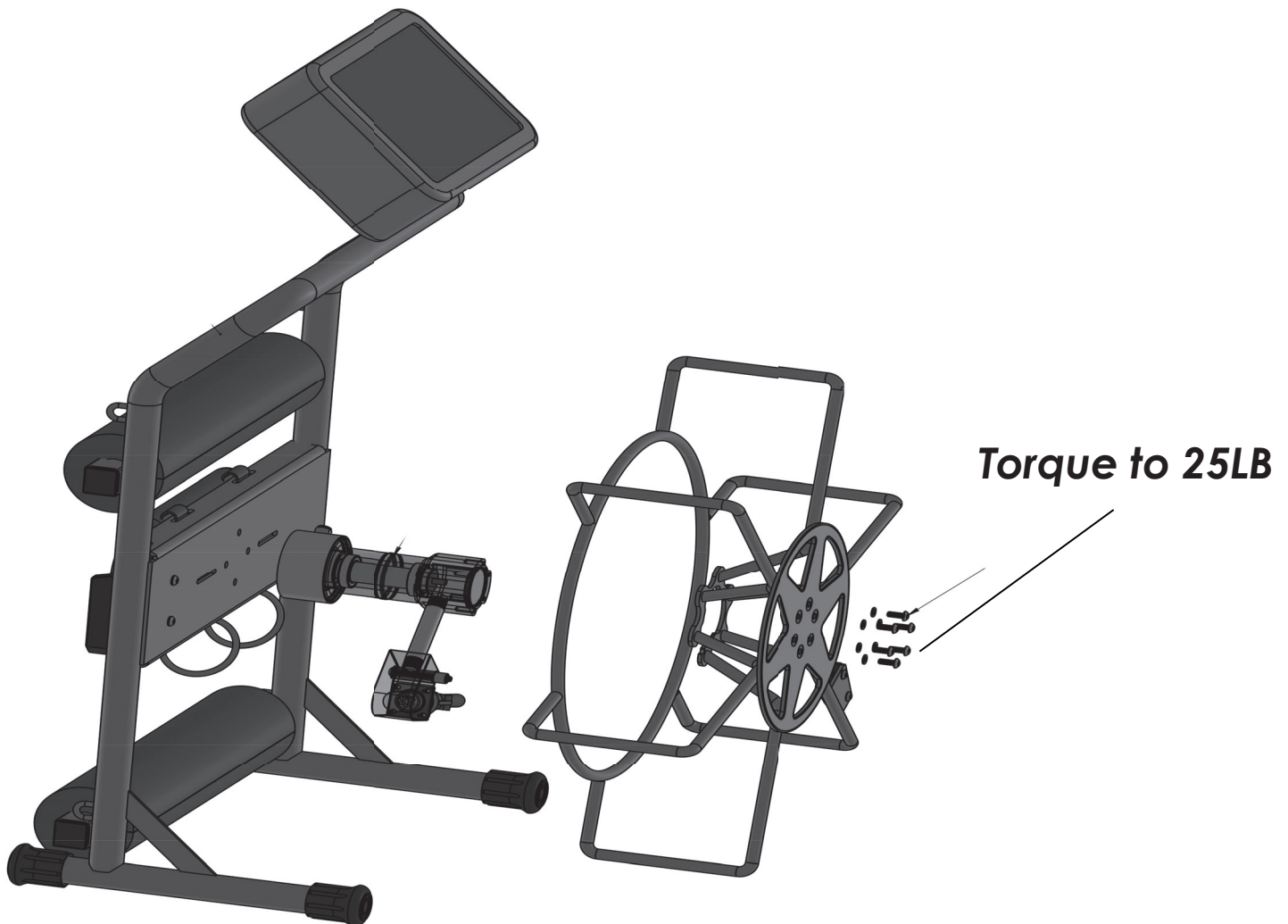


FIG.14

18. CAMERA ASSEMBLY STYLES

Junior systems may use one of two camera assembly styles. Identify the camera assembly before removing or installing the camera. Use only the instructions for the camera assembly installed on the unit.

Original Camera Assembly	Uses the camera removal and installation instructions on page 24 . This style includes the set screw and threaded collar.
Push Cable to Spring Assembly	Uses the push cable to spring instructions on pages 25-26 . This style uses a keyed connector and collar.

Important: Pull connectors straight in and straight out. Do not twist or rotate the connector. Twisting can damage the pins.

If the camera assembly on the unit does not match the page shown, stop and use the other camera assembly section.

18. Remove / Install Camera

Using an allen wrench remove the setscrew #7 **FIG 16**. Unscrew the collar from the cable at camera. Pull straight out being careful not to bend the pins.

To reattach be sure top screw on the camera aligns with cutout on connector **FIG. 15** and push together until firmly connected, tighten collar and place set screw to secure. **FIG. 16**

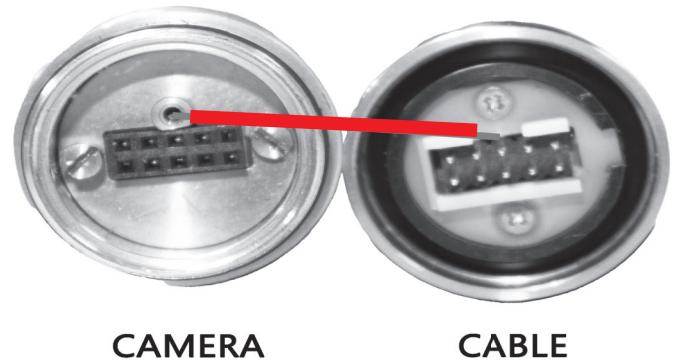


FIG. 15

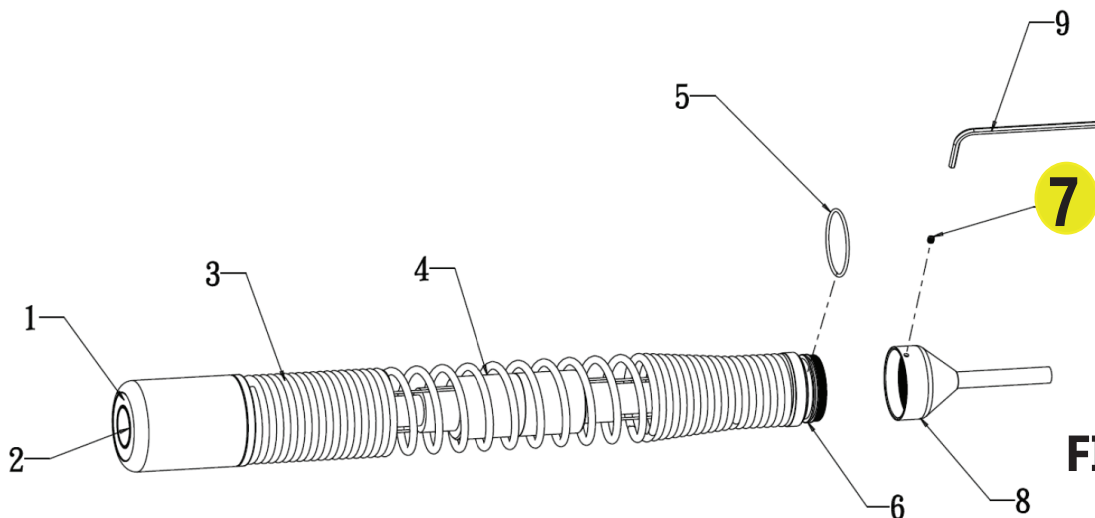


FIG. 16

- | | | |
|-----------------------|-----------------------------|-----------------------------|
| (1) Camera LEDs | (2) Camera Lens | (3) Cover Spring |
| (4) 512Hz Transmitter | (5) O-ring | (6) O-ring Slot and Threads |
| (7) Setting Screw | (8) Push Rod Thread Coupler | (9) Hex Wrench |

Note: The camera LEDs become warm when set to maximum intensity.

Warnings

- Keep the connector dry and clean when dis-attach or attach the camera to the coupler
- Warranty is invalid if stickers, tags, or labels are removed

#7 THE SET SCREW IS VERY SMALL!

USE CAUTION WHEN HANDLING.

Small allen head.

18B. PUSH CABLE TO SPRING - DISASSEMBLY

1. DISASSEMBLY (REMOVE FIRST)

1. Loosen collar

Turn the collar COUNTER-CLOCKWISE to loosen.
Use pliers on the collar's flat marks only if necessary.
Once loose, finish unthreading by hand.



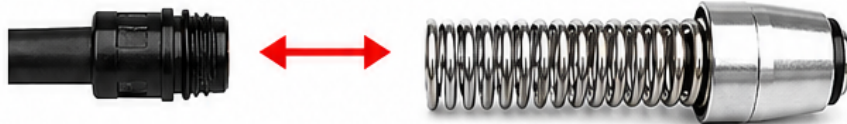
2. Slide collar back

With the spring and parts still attached, slide the collar back down the cable until the connector is fully exposed.



3. Separate

Pull the connector and spring straight apart.
DO NOT TWIST.



18C. PUSH CABLE TO SPRING - ASSEMBLY

2. ASSEMBLY (INSTALL)

1. Reattach connector

Locate the half-circle guide notch inside the female connector.

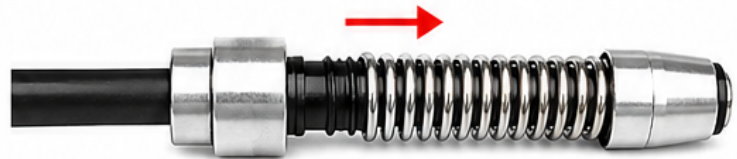
Align the connector pins/key with that notch, then push straight in.

DO NOT TWIST OR ROTATE.



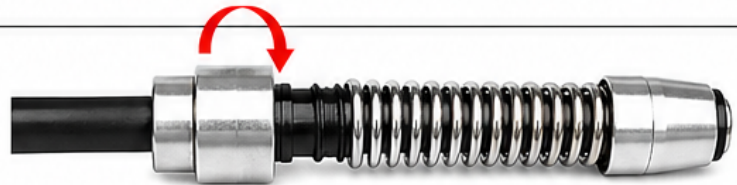
2. Slide collar back

With the connector fully seated, slide the collar back up over the spring and toward the connector.



3. Thread collar

Turn the collar CLOCKWISE by hand until snug.



4. Final tighten

Use pliers on the collar's flat marks only if necessary. Tighten until secure.



19. SKID INSTALLATION

For single piece skids.

Loosen set screws being careful not to pull them out.

Slide skid over camera head, push on fully.

Tighten set screws

Tug lightly on skid to be sure it is tight. **FIG. 17**



FIG. 17

20. WIFI

The display has a WIFI function to mirror to a phone or tablet.

1. Go to WIFI in settings on phone or tablet and connect to the network SUBTECH-XXXX. The password is 12345678, if you click remember this network you shouldn't need the password on future uses.
2. After successfully connecting, on the phone or tablet open browser and type in `http://10.10.10.254/`
3. Login into website with username of **admin** and password of **admin** to gain access of the control panel.
4. After initial setup the steps 2 and 3 may be skipped and enter-
`http://10.10.10.254:8080/` for the live image without going through setup. See **FIG. 18**

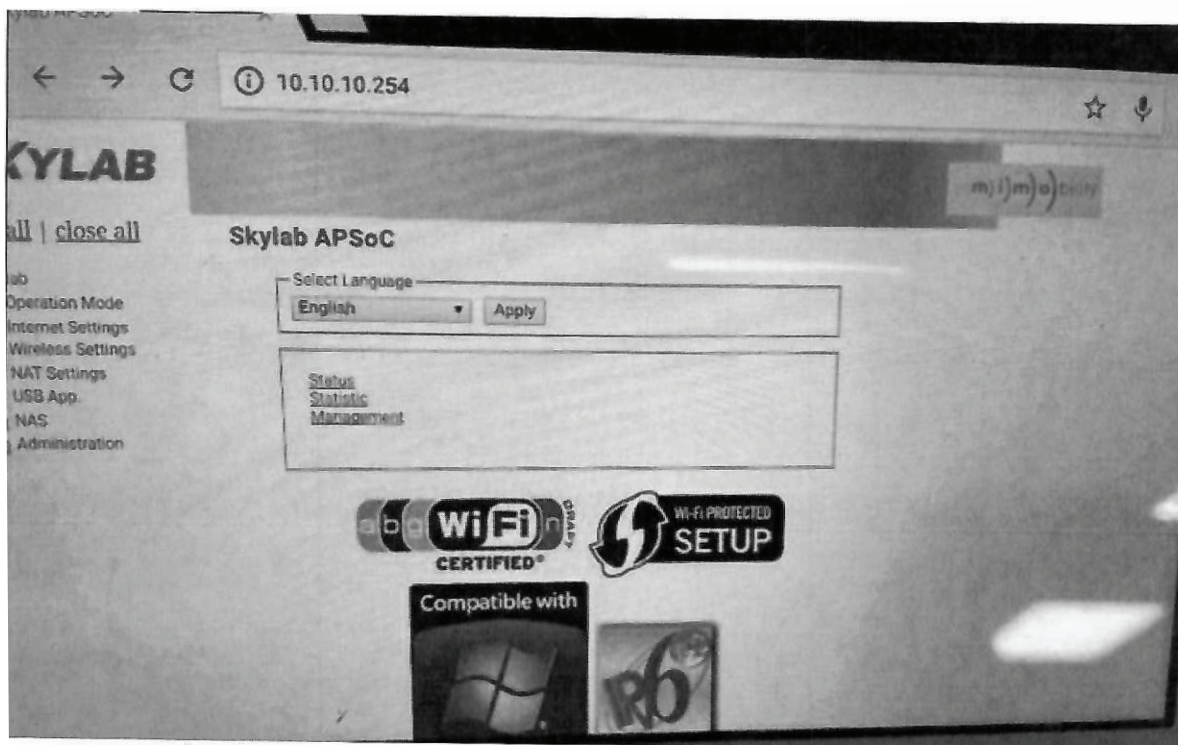


FIG. 18

21. Camera Locators

This system is equipped with a 512Hz receiver to locate the camera head.

We offer two locators. The traditional VM-540 is a stick locator and uses sound to notify the user.

The V-loc3 uses a visual interface to guide the user to the camera as well as sound.



VM-540



V-LOC3

22. SPECIFICATIONS

Model Specifications
<ul style="list-style-type: none">• Line Capacity: 1" - 4"
<ul style="list-style-type: none">• Max. Distance: 140 ft (42.6 m)
<ul style="list-style-type: none">• Operating Depth: 350 ft. (150 psi)
<ul style="list-style-type: none">• Display: 7" 720(H) x 480(V) Pixels Color LCD TAFT Monitor
<ul style="list-style-type: none">• Rechargeable Battery
<ul style="list-style-type: none">• Camera Dimensions: 1.3" x 2" (33 mm x 50.8 mm)
<ul style="list-style-type: none">• Push-Rod Diameter: 0.375" (9.5mm)
<ul style="list-style-type: none">• Video Format: NTSC or PAL
<ul style="list-style-type: none">• Interface- Mini USB 1.1; AV Out
<ul style="list-style-type: none">• Power: 100-240V AC in/5v DC Out
<ul style="list-style-type: none">• Operating Temperature: -4°-140°F
<ul style="list-style-type: none">• Weight: 35lb
<u>Available Options</u>
<ul style="list-style-type: none">• Camera Locator Receiver
<ul style="list-style-type: none">• 10mm Cable
<ul style="list-style-type: none">• 18V Milwaukee Battery System

Service & Repair

For Service or repair, the unit should be returned to an authorized repair center or the factory. If you have any questions regarding service or repair, or for the name and address of your nearest repair center please contact;

Subtech Manufacturing Inc.

Repair Department

2905 Railroad Avenue Ste. A
Ceres, CA 95307

Phone: 209-668-5840

Toll Free: 877-754-3435

Email: info@subtechmfg.com