



RECON

DW0014 Rev 02.1
Remote Video Viewing

SAFETY WARNINGS / PRECAUTIONS

KEEP THIS MANUAL – DO NOT LOSE

THIS MANUAL IS PART OF THE RECON SYSTEM AND MUST BE RETAINED FOR THE LIFE OF THE PRODUCT. PASS ON TO SUBSEQUENT OWNERS.

Ensure any amendments are incorporated with this document.



WARNING! The RECON is designed for a specific use. Using the RECON outside of its intended use is dangerous. Failure to comply with the warnings, instructions, and specifications in this manual could result in **PERSONAL INJURY** or **EQUIPMENT DAMAGE**. Read and understand this manual before using.



WARNING! DO NOT DISCONNECT UNDER LOAD. Shut off power before connecting or disconnecting the RECON. Permanent damage to electronics could occur.



WARNING! DO NOT DISASSEMBLE. No user-serviceable parts. Disassembling any of the components in this product, beyond the instructions in this user manual, could void the regulatory certifications and/or effect the safety of the product.



The WEEE symbol indicates that the product must not be disposed of as unsorted municipal waste, but should be collected separately.

(see "Disposal" on page 42 for additional details).

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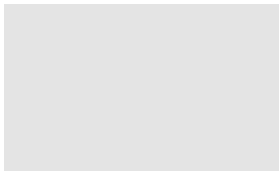
IDENTIFICATION

1.1. Product Brand

This user manual describes the proper safety precautions, setup and use of the RECON.

1.2. Manufacturer

Distributor:



Manufacturer:

Jireh Industries Ltd.
53158 Range Road 224
Ardrossan, Alberta, Canada
T8E 2K4
780.922.4534
jireh.com

1.3. Compliance Declarations

1.3.1. ISED Emissions Compliance (Canada)

CAN ICES-003(A) / NMB-003(A)

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

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

1.3.2. FCC Suppliers Declaration of Conformity (United States)

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, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in

accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

RESPONSIBLE PARTY Jireh Industries
NAME:

ADDRESS: 2955 S Sam Houston Pkwy E
Suite 300
Houston, Texas
United States 77047

TELEPHONE: 832-564-0626

1.3.3. European Union CE Declarations

Jireh Industries hereby declares that the RECON product complies with the essential requirements and other relevant provisions of the following European Union directives:



- | | |
|------------|---------------------------------------------------------|
| 2014/30/EU | EMC Directive |
| 2014/35/EU | Low Voltage Directive |
| 2012/19/EU | Directive on Waste Electrical and Electronic Equipment |
| 2011/65/EU | Directive on Restriction of Hazardous Substances (RoHS) |

1.3.4. UKCA Declarations

Jireh Industries hereby declares that the RECON product complies with the essential requirements and other relevant provisions of the following UK directives.



Title	Edition/ Date of Issue
Electromagnetic Compatibility Regulations	2016
Electrical Equipment (Safety) Regulations	2016
Waste Electrical and Electronic Equipment Regulations	2013
Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations	2012

PRODUCT SPECIFICATIONS

2.1. Base RECON System

2.1.1. Intended Use

The RECON's primary purpose is to provide a visual driving reference and capture video of inspections. It is intended for use with the Parent Products and their limits listed in (*Chapter 2.2*).

2.1.1.1 User

The RECON is intended to be used by persons who have read and understand this user manual as well as the user manual of the relevant parent products.

2.1.1.2 Operating Environment

The RECON is for use in dry industrial environments having ambient temperatures shown below. It is NOT intended for use in explosive environments.

Category	Parameter	Specification
Environment	Minimum ambient temperature	-20° C (-4° F)
	Maximum ambient temperature	50° C (122° F)

2.1.2. Unintended Use

The RECON is NOT intended for:

- ▶ use outside of its intended use
- ▶ use on any products other than those listed as Parent Products (*Chapter 2.2*).

2.1.3. Dimensions and Weight

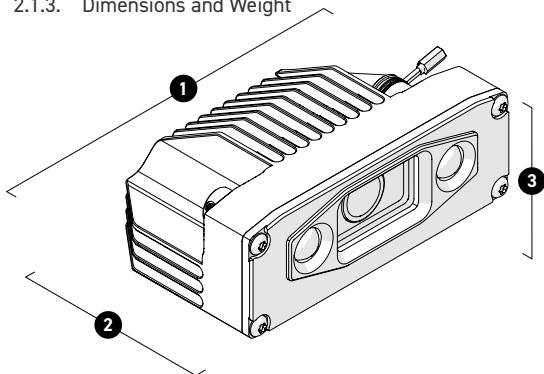


Fig. 1 - Camera dimensions

1	Width:	9.4 cm	3.7 in
2	Depth:	5.8 cm	2.3 in
3	Height:	3.7 cm	1.5 in
	Camera weight:	0.173 kg	0.382 lb

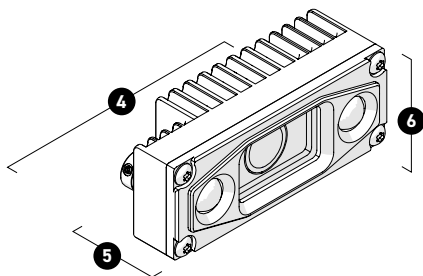


Fig. 2 - Satellite camera dimensions

4	Width:	7.2 cm	2.8 in
5	Depth:	2.8 cm	1.1 in
6	Height:	3.3 cm	1.3 in
	Satellite camera weight:	0.078 kg	0.174 lb

2.1.4. Power Requirements

Input Voltage:	25-45VDC
Input Power DWA004:	16W
Input Power DWA005:	14W

2.1.5. Environmental Sealing

Dust-tight, watertight (*not submersible*).

2.1.6. Performance Specifications

Max video resolution:	Full HD (1080p 30fps)
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2.2. Parent Products

The RECON is intended to be used with one of the Parent Products listed in this section. These Parent Products have a user manual of their own, and shall be referred to for their product specifications.

2.2.1. NAVIC

The NAVIC crawler is a steerable, motorized scanning platform. Capable of longitudinal and circumferential travel on pipes and tubes.

The NAVIC has a user manual of its own, and shall be referred to for the NAVIC'S specifications.

2.2.2. TERAX

The TERAX motorized scanning platform. Capable of internal travel on pipes and tubes as well as on flat surfaces.

The TERAX has a user manual of its own, and shall be referred to for the TERAX'S specifications.

DEFINITIONS

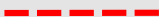
3.1. Definition of Symbols



Instructions to 'look here' or to 'see this part'.



Denotes movement. Instructing users to carry out an action in a specified direction.



Indicates alignment axis



Alerts the user that the view has changed to a reverse angle.

3.2. Safety Symbols

The following safety symbols might appear on the product and in this document. Read and understand their meaning below:



General
warning
symbol

This symbol is used to alert the user to potential hazards. All safety messages that follow this symbol shall be obeyed to avoid possible harm or material damage.



Shock hazard
caution
symbol

This symbol is used to alert the user to potential electric shock hazards. All safety messages that follow this symbol shall be obeyed to avoid possible harm.

3.3. Safety Signal Words

The following safety signal words might appear in this document. Read and understand their meaning below:

DANGER!

The DANGER signal word indicates an imminently hazardous situation. It calls attention to a procedure, practice, or the like that if not correctly performed or adhered to will result in death or serious personal injury. Do not proceed beyond a DANGER signal word until the indicated conditions are fully understood and met.

WARNING!

The WARNING signal word indicates a potentially hazardous situation. It calls attention to a procedure, practice, or the like that if not correctly performed or adhered to could result in death or serious personal injury. Do not proceed beyond a WARNING signal word until the indicated conditions are fully understood and met.

CAUTION!

The CAUTION signal word indicates a potentially hazardous situation. It calls attention to a procedure, practice, or the like that if not correctly performed or adhered to may result in minor or moderate personal injury, material damage, particularly to the product, destruction of part or all of the product, or loss of data. Do not proceed beyond a CAUTION signal word until the indicated conditions are fully understood and met.

SYSTEM COMPONENTS

4.1. Base System Components

4.1.1. Camera DWA004

The camera mounts to the crawler via the adjustable camera bracket. The camera includes LED lights for low-light illumination.

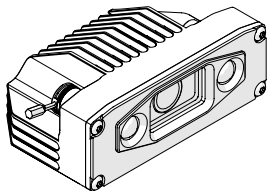


Fig. 3 - Camera

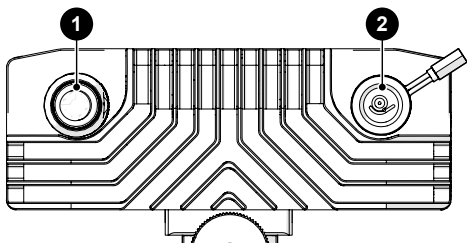


Fig. 4 - Rear of camera

Two sockets are found on the rear of the camera housing. The **1** main socket (*on the left when observing from the rear*) is a connection for the camera cable. The **2** satellite socket (*on the right when observing from the rear*) accommodates a cable which plugs into the satellite (*rear*) camera. The satellite socket includes a cap to protect the socket when not in use.

4.1.2. Camera Bracket DWS001

The Camera Bracket attaches the camera to a NAVIC and provides viewing angle adjustments.

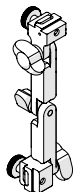


Fig. 5 - Camera bracket

4.1.3. Crawler Powered Camera Cable UMA050-

The Crawler Powered Camera Cable connects the camera to the tablet as well as connection to the crawler, which provides power to the camera.

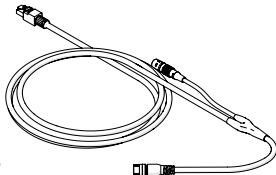


Fig. 6 - Crawler powered camera cable

4.1.4. Ethernet Cable UMA055-

The Ethernet Cable connects the power controller to the tablet.

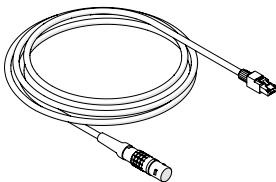


Fig. 7 - Ethernet cable

4.1.5. Tablet DWA008

RECON • Studio application displays the video images.

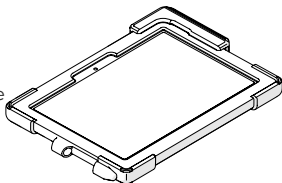


Fig. 8 - Tablet

4.1.6. Satellite Camera DWA005

The satellite camera offers a 2nd camera angle on the crawler.

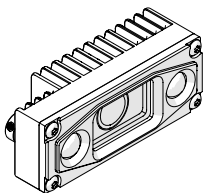


Fig. 9 - Satellite camera

4.1.7. Dual Camera Bracket DWS003

The Dual Camera Bracket is used for both the camera and satellite camera on a NAVIC.

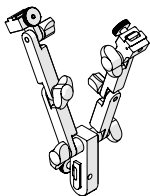


Fig. 10 - Dual camera bracket

4.1.8. Satellite Camera Cable UMA047-

The satellite camera cable connects the satellite camera to the main camera for power and transmission of video signals.

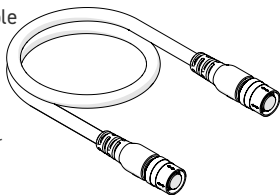


Fig. 11 - Satellite camera cable

4.1.9. Camera Cable UMA046-

The camera cable connects the camera to the automated crawler.

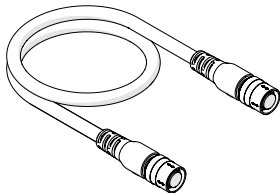


Fig. 12 - Camera cable

4.1.10. Short Camera Bracket DWS002

The Short Camera Bracket allows the camera to be mounted to the TERAX crawler.

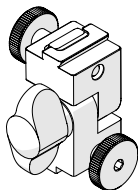


Fig. 13 - Short camera bracket

4.1.11. RECON Case DWA008

The product includes a fitted case for all the components of this system.

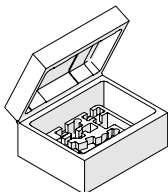


Fig. 14 - RECON case

PREPARATION FOR USE

First, prepare the automated crawler for use as instructed in the specific crawler's user manual.

5.1. Configurations

5.1.1. NAVIC Single Camera

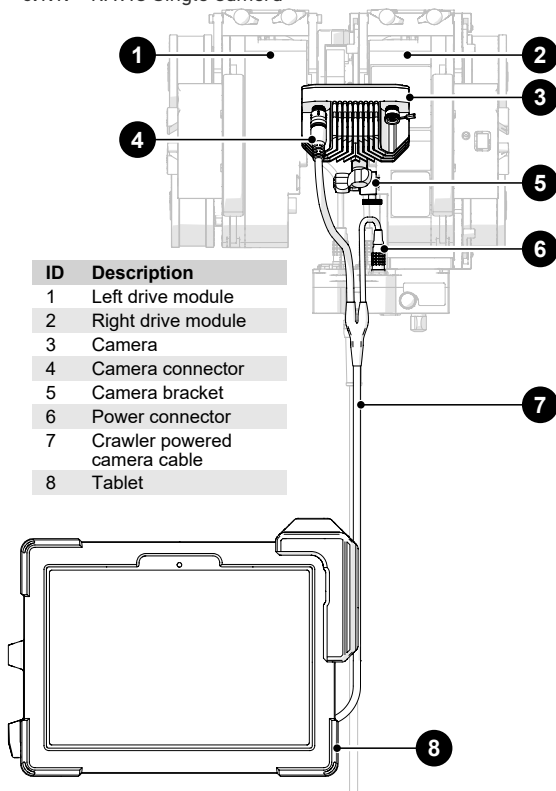


Fig. 15 - NAVIC single camera configuration

5.1.2. NAVIC Two Camera

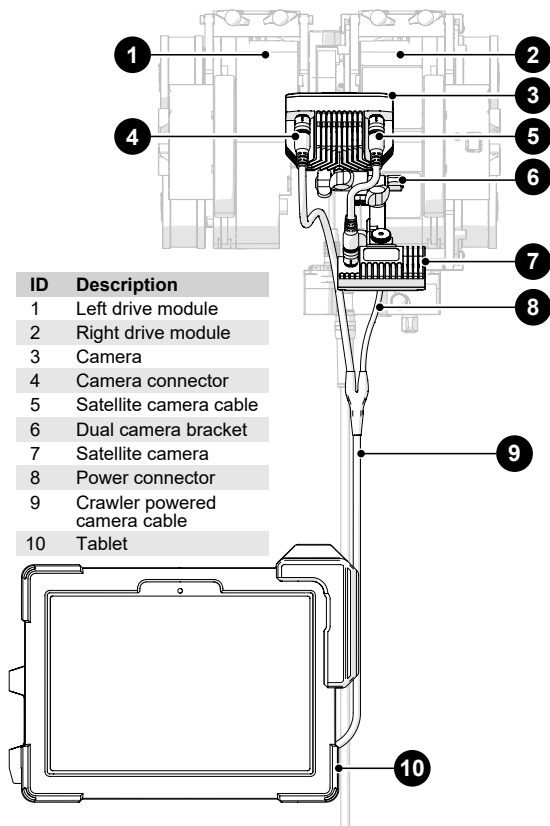
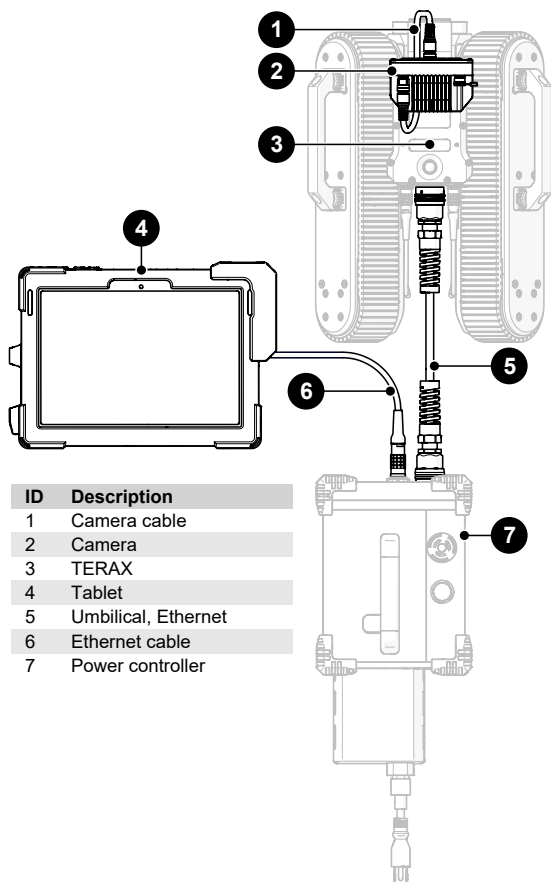


Fig. 16 - NAVIC two camera configuration

5.1.3. TERAX Single Camera



ID	Description
1	Camera cable
2	Camera
3	TERAX
4	Tablet
5	Umbilical, Ethernet
6	Ethernet cable
7	Power controller

Fig. 17 - TERAX single camera configuration

5.2. Attaching Camera

1. Loosen the camera mount thumb screw on the camera bracket (Fig. 18).

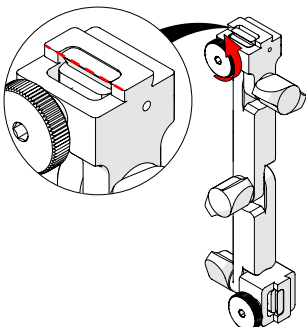


Fig. 18 - Loosen camera mount knob

2. Attach the camera to the bracket and tighten the thumb screw (Fig. 19).

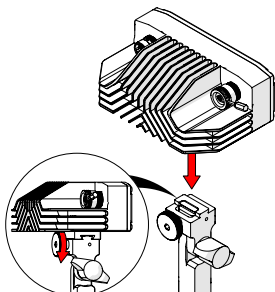


Fig. 19 - Attach camera and tighten knob

3. Loosen the crawler mount thumb screw (Fig. 20).

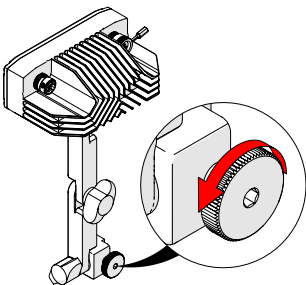


Fig. 20 - Loosen knob

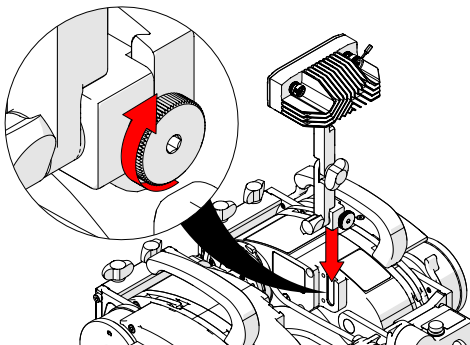


Fig. 21 - Attach bracket to the crawler and tighten thumb screw

4. Attach the bracket to the crawler's dovetail accessory mount (Fig. 21).
5. Tighten the thumb screw (Fig. 21).

5.3. Adjusting Camera Angle

1. Loosen the wing knob at the bottom of the bracket to adjust the camera bracket angle (Fig. 22).
2. Adjust camera angle as required and tighten the wing knob.

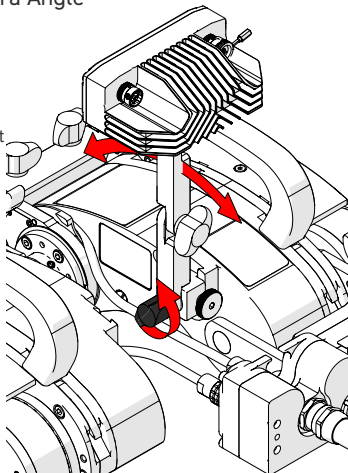


Fig. 22 - Adjust the camera bracket angle

3. Loosen the middle wing knob to adjust the camera's horizontal angle (Fig. 23).
4. Tighten the wing knob when the required angle is achieved.

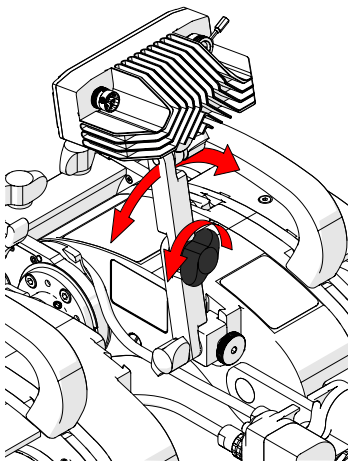


Fig. 23 - Adjust horizontal angle

5. Loosen the top wing knob to adjust the camera angle (Fig. 24).
6. Tighten the wing knob when the required angle is achieved.

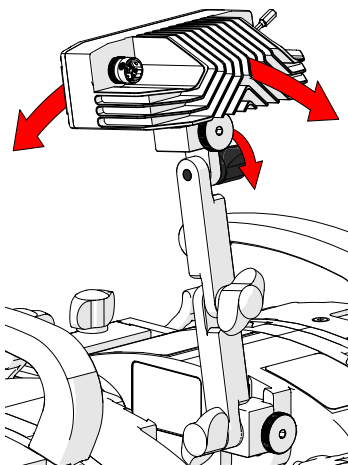


Fig. 24 - Adjust camera angle

5.4. Connecting Crawler Powered Camera Cable



WARNING! DO NOT DISCONNECT UNDER LOAD. Shut off power before connecting or disconnecting the RECON. Permanent damage to electronics could occur.



1. Ensure crawler's system power is off.
2. Connect the crawler powered camera cable to the left side receptacle of the camera (Fig. 25).

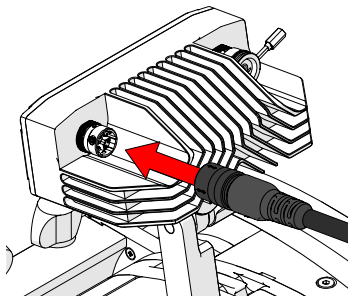


Fig. 25 - Connect crawler powered camera cable to the camera

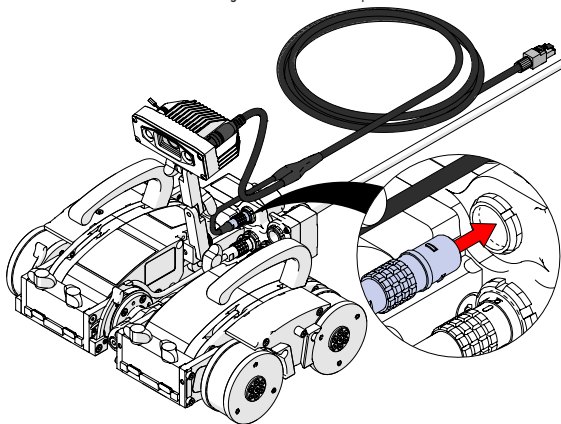


Fig. 26 - Connect camera power connector to crawler's auxiliary connector

3. Connect the crawler powered camera cable's power to the crawler's auxiliary connector (Fig. 26).

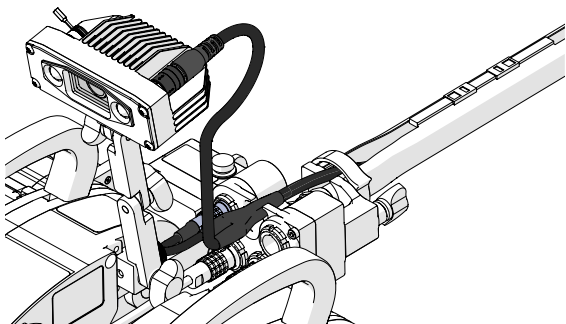


Fig. 27 - Route crawler powered camera cable into cable management

4. Route the crawler powered camera cable (Fig. 27) into the crawler's cable management (see crawler's user manual for details).

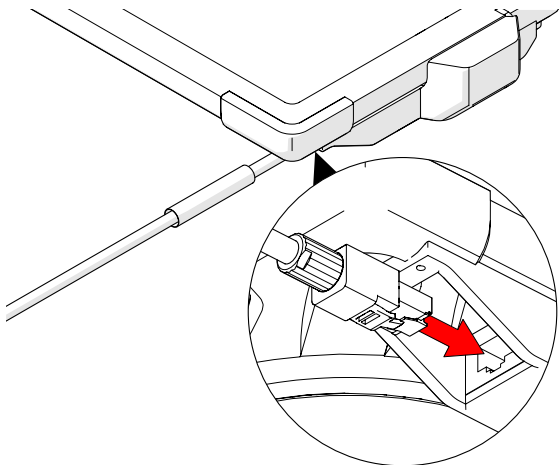


Fig. 28 - Connect the Ethernet connection to the tablet

5. The Ethernet connector of the crawler powered camera cable plugs into the tablet (Fig. 28).

5.5. Connecting the Camera Cable

1. Ensure crawler's system power is off.
2. Connect the camera cable to the left side receptacle of the camera (Fig. 29).

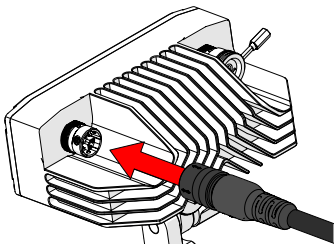


Fig. 29 - Connect the camera cable to the camera

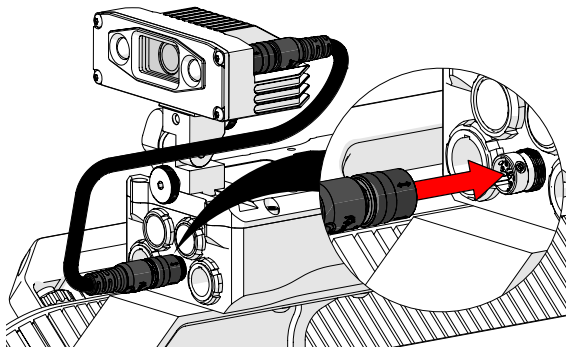


Fig. 30 - Connect camera to the crawler

3. Connect the camera cable to the crawler's CTRL connector (Fig. 30).

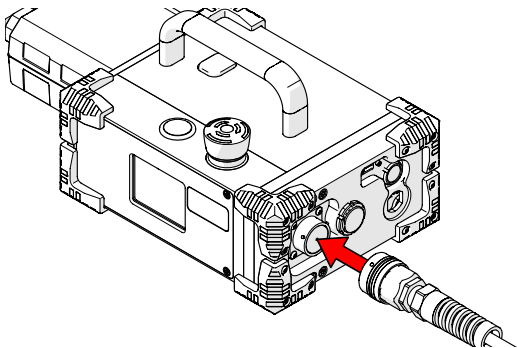


Fig. 31 - Connect camera power to umbilical

4. Connect the crawler's umbilical to the power controller (see crawler's user manual for details).

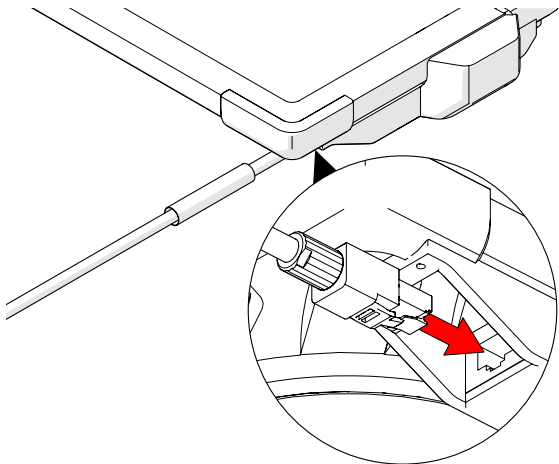


Fig. 32 - Connect Ethernet cable to the Ethernet connection of the tablet

5. The Ethernet connector of the Ethernet cable plugs into the tablet (Fig. 32).

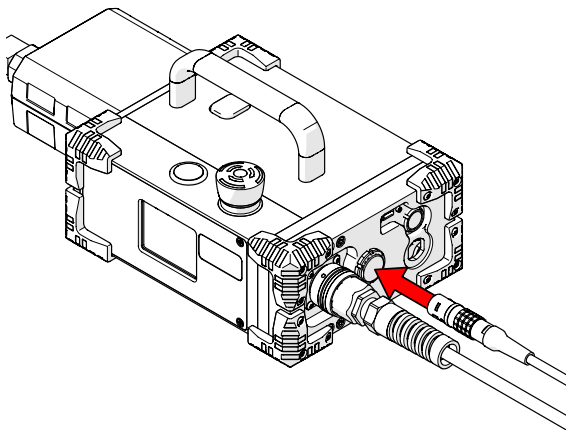


Fig. 33 - Connect camera cable Ethernet connection to the tablet

6. Connect the Ethernet cable to the power controller (Fig. 33).

5.6. Attaching Satellite Camera



WARNING! DO NOT DISCONNECT UNDER LOAD. Shut off power before connecting or disconnecting the RECON. Permanent damage to electronics could occur.



Using the dual camera bracket (Fig. 34), follow the preceding steps to attach the satellite camera.

1. Attach the satellite camera to the dual camera bracket (see “Attaching Camera” on page 17).

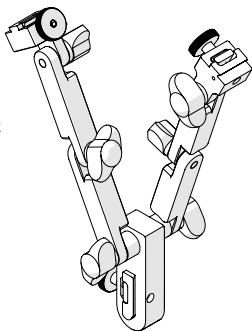


Fig. 34 - Dual camera bracket

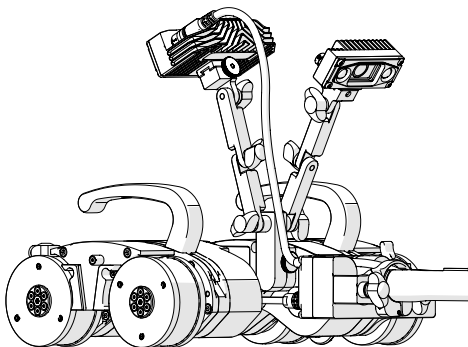


Fig. 35 - Satellite camera attached to dual camera bracket

2. Adjust the angle of the satellite camera (Fig. 35) as required (see “Attaching Camera” on page 17).

3. Remove the satellite socket cap from the camera (Fig. 36).

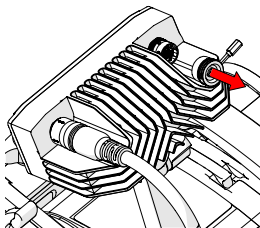


Fig. 36 - Remove satellite socket cap

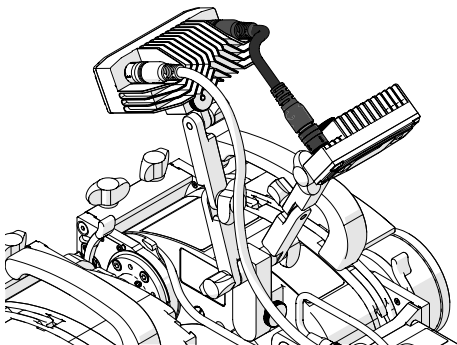


Fig. 37 - Connect satellite camera cable to both cameras

4. Ensure crawler's system power is off.
5. Connect the satellite camera cable to both the camera and satellite camera (Fig. 37).

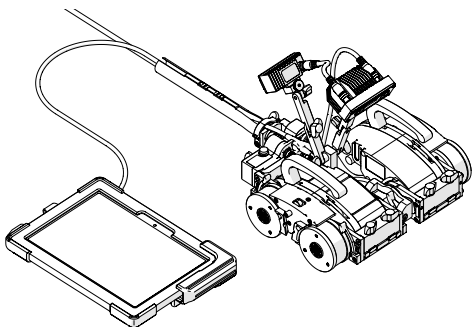


Fig. 38 - Connect satellite camera cable to both cameras

6. Connect the tablet to the camera cable (Fig. 38).

5.7. Tablet

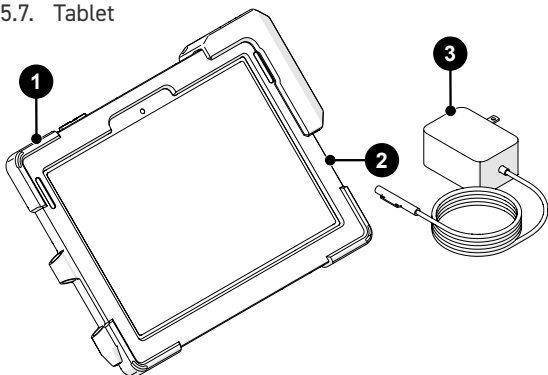


Fig. 39 - RECON tablet and charger

- 1 Power Button
- 2 Charge Port
- 3 Charger

5.8.1. Charging the tablet

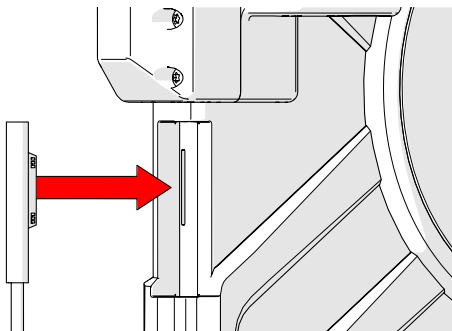


Fig. 40 - Connect charger to the tablet's charge port

The charger connects to the tablet's charge port. When charging properly, an LED light on the charger cable will illuminate.

OPERATION

Refer to the **NAVIC** user manual for the preparation and operation of the **NAVIC**. Powering up the **NAVIC** system with the Camera connected will activate the Camera and the tablet screens described below.

Refer to the **TERAX** user manual for the preparation and operation of the **TERAX**. Powering up the **TERAX** system with the Camera connected will activate the Camera and the tablet screens described below.

6.1. System Activation

During the initiation process, the camera's led lights will blink to indicate power, and the signal has reached the camera.

To power the camera, the crawler system must be powered-on.

6.2. RECON · Studio

6.2.1. LIVE Mode Interface

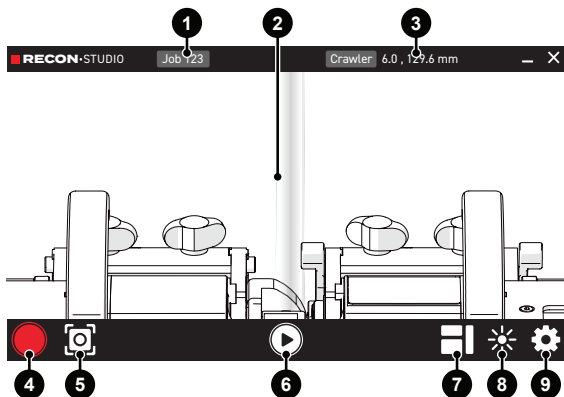


Fig. 41 - RECON · Studio, LIVE mode interface

1

Session Name Press to open the session manager to create, select, or delete a session. When the system is first powered on, **No Session Active** will be displayed. A new session will be required before videos and snapshots can be recorded

2

View Window Displays the live video streams in **LIVE** mode or recorded video and images in **PLAYBACK** mode.

3

X and Y encoder options and encoder position display Press **Crawler** button for encoder options. The encoder position of the crawler, and any attached accessory will display here.

NOTE: When setting the encoder position to zero on the handheld controller, ensure the encoder position is also reset by the user within the RECON • Studio application. The encoder data on the handheld controller is independent of the RECON.

4



Video Record Press to start and stop recording video streams.

5






Snapshots Press at any time to capture a still snapshot.

6



PLAYBACK mode Press to exit **LIVE** mode and enter **PLAYBACK** mode to access video and snapshot review and file management.

7		Camera Layout	Only available when a satellite camera is connected. The Camera Layout allows the user to choose between a variety of video stream layout options
8		LED Light Brightness	Control the brightness of the led lights on the camera (<i>this does not adjust video exposure</i>).
9		Settings	Access all settings related to the camera (<i>see "Settings" on page 31 for additional details</i>).

6.2.2. Settings

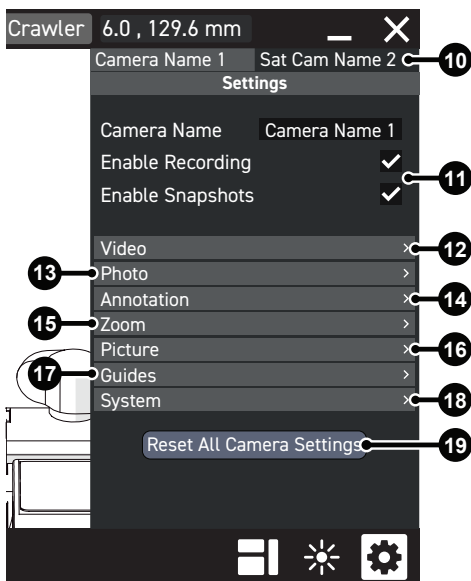


Fig. 42 - RECON • Studio settings

10	Camera Selection Tab	With a satellite camera connected, the settings for each camera are accessible by pressing the appropriate tab. The View Window will only display the live stream of the selected tab while the settings dialogue is open.
11	Enable Recording/Snapshots	When pressing the Record or Snapshot button, only cameras that have their respective settings enabled will be included in the recording or snapshot. In a two-camera setup, this permits a user to exclude a camera (<i>such as a driving only camera</i>) from recording in order to preserve disk space.
12	Video	Resolution and video encoding settings.
13	Photo	Snapshot size and quality settings.
14	Annotation	Optional date, time, and encoder information included in video.
15	Zoom	Video orientation options such as zoom, rotation, and flip
16	Picture	Exposure, brightness, contrast and other picture options.
17	Guides	Optional guide lines/crosshair (<i>overlay only, not recorded in video or snapshots</i>).
18	System	Camera information and firmware versions
19	Restore	Press the Reset all Camera Settings to restore all default settings.

6.2.3. PLAYBACK Mode Interface

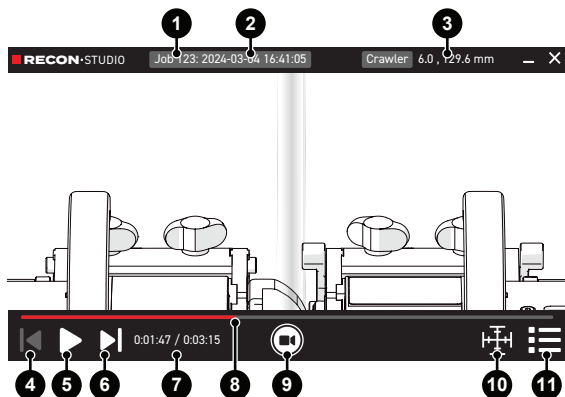


Fig. 43 - RECON · Studio, PLAYBACK mode interface

1	Session Name	The session name that was active when recording.
2	File date and time	The date and time the recording began.
3	Encoder	The encoder data corresponds to the current position of the play head.
4	Previous	Navigate to the previous clip in the session.
5	Play / Pause	Press the button to start playing the selected video.
6	Next	Navigate to the next clip in the session.
7	Time Code	Shows the current position of the play head and the total length of the clip.
8	Play Head	Press and drag the play head to navigate through the footage.

9



Record Screen Press to exit **PLAYBACK** mode and enter **LIVE** mode

10



Guide Toggle If guides were recorded with the chosen video, they can be switched on or off.

NOTE: *Guides are not embedded in the recorded video, but are overlaid while recording or during playback.*

11



File Manager Activate the session and file manager.

6.2.4. File manager

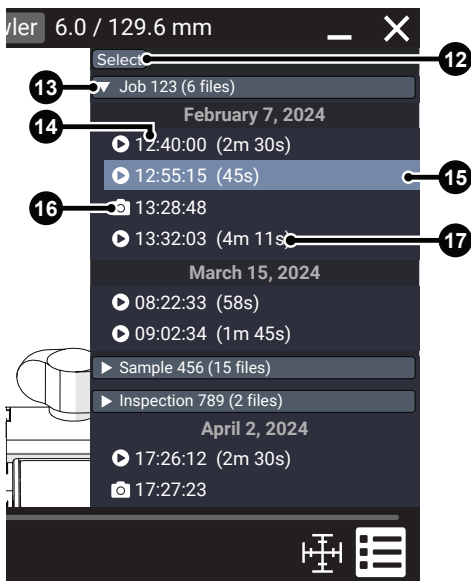


Fig. 44 - RECON - Studio file manager

- | | | |
|-----------|--------------------------|-------------------------------------------------------------------------------------------------|
| 12 | Select / Export / Delete | Press Select to enable multiple file selection and the option to Export or Delete files. |
| 13 | Session | The directory for the session. |
| 14 | Time | The timestamp indicating when the video capture began or the snapshot was taken. |
| 15 | Selected File | The highlighted file is currently selected and displayed in the viewer. |

- 16 File Type The icon symbolizes the file format.
- 17 Video Length The video file's duration.

MAINTENANCE

7.1. Maintenance Schedule

The Camera must be maintained according to the following schedule:

Task	Frequency
<u>Inspect cables and connectors</u> Inspect the cables for damage. Have any damaged cable repaired by a qualified person or replace the cable assembly as necessary. ▶ Inspect all connectors for damage or moisture. Straighten bent pins. Dry connectors before using.	Every use
<u>General cleaning</u> Ensure that the Camera stays relatively clean by wiping off any excess dirt or other contaminants after every use.	Every use

7.2. Cleaning

General cleaning of components is important to keep your system working well. All components that have no wiring or cables are waterproof. Components can be washed with warm water, dish soap and a medium bristle brush.

Before using the scanner, ensure all connectors are free of water and moisture.

Inspect cables/connectors daily and as required, depending on the occurrence of damaging events.

NOTE: All components with wiring, cables or electrical connections are splashproof. However, these components are **NOT** submersible.

NOTE: Never use strong solvents or abrasive materials to clean your scanner components.

TROUBLESHOOTING

Problem	Possible Cause	Solution
The camera does not activate (<i>no flashing lights on power up</i>).	The cables are not properly connected.	Unplug all cables, and plug them back in, ensuring cables are properly connected.
	Restart the Studio application.	Return to manufacturer for repair. Do not activate the camera, do not attempt to repair it. (see “Jireh Industries Ltd.” on page 1). Within the Studio application, enter the settings and choose the system tab. Press Restart Now.
Camera lights flashing, no connection to RECON • Studio application.	Ethernet cable not connected to tablet.	Ensure Ethernet cable is properly connected to tablet.
	Ensure enough time has elapsed for camera firmware to startup.	Wait 45 seconds to ensure camera startup has completed processing.
	The Studio application needs to be restarted.	Close and re-open the Studio application on the tablet.
	The camera requires power-cycling.	Camera requires power-cycling. Turn the camera off and on and wait 45 seconds.

SERVICE AND REPAIR



WARNING! DO NOT DISASSEMBLE. No user-serviceable parts. Disassembling any of the components in this product, beyond the instructions in this user manual, could void the regulatory certifications and/or effect the safety of the product.

For issues with your RECON, first, consult “Troubleshooting” (see “*Troubleshooting*” on page 38) and then “Technical Support” (see “*Technical Support*” on page 39).

9.1. Technical Support

For technical support, contact Jireh Industries (see “*Jireh Industries Ltd.*” on page 1).

SPARE PARTS

To order accessories or replacement parts for the RECON (contact Jireh Industries Ltd. on page 1).

NOTE: These drawings are for parts order. This is not a list of kit contents.

10.1. RECON Spare Parts

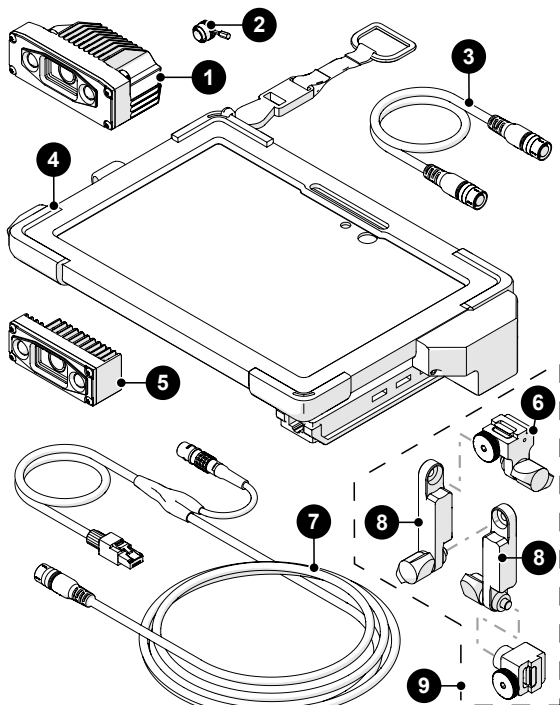


Fig. 45 - Spare parts

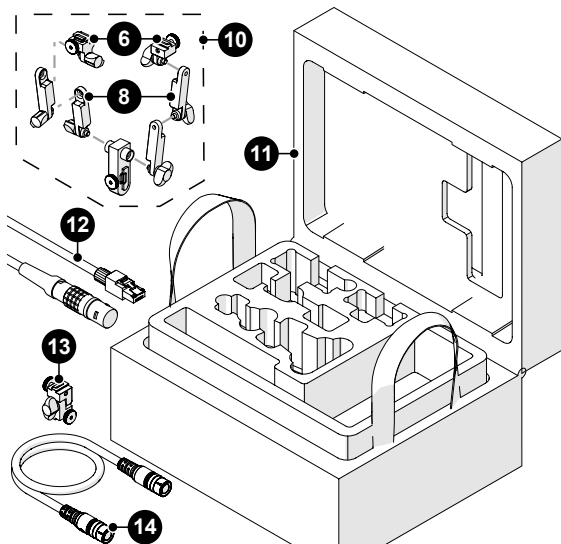


Fig. 46 - Spare parts

BOM ID	Part #	Description
1	DWA004	Camera
2	JP132	Camera socket plug
3	UMA047-X	Satellite camera cable
4	DWA008	Tablet
5	DWA005	Satellite camera
6	DWS004	Camera bracket, mount
7	UMA050-X	Crawler powered camera cable
8	DWS005	Camera bracket, arm
9	DWS001	Camera bracket
10	DWS003	Dual camera bracket
11	DWA007	RECON case
12	UMA055-X	Ethernet cable
13	DWS002	Short camera bracket
14	UMA046-	Camera cable

DISPOSAL

WEEE Directive

In accordance with European Directive on Waste Electrical and Electronic Equipment (WEEE), this symbol indicated that the product must not be disposed of as unsorted municipal waste, but should be collected separately. Refer to Jireh Industries for return and/or collection systems available in your country.



LIMITED WARRANTY

WARRANTY COVERAGE

Jireh Industries warranty obligations are limited to the terms set forth below: Jireh Industries Ltd. (“Jireh”) warrants this hardware product against defects in materials and workmanship for a period of THREE (3) YEARS from the original date of purchase. If a defect exists, at its option Jireh will (1) repair the product at no charge, using new or refurbished replacement parts, (2) exchange the product with a product that is new or which has been manufactured from new or serviceable used parts and is at least functionally equivalent to the original product, or (3) refund the purchase price of the product. A replacement product/part assumes the remaining warranty of the original product or ninety (90) days from the date of replacement or repair, whichever provides longer coverage for you. When a product or part is exchanged, any replacement item becomes your property and the replaced item becomes Jireh’s property. When a refund is given, your product becomes Jireh’s property.

OBTAINING WARRANTY SERVICE

To utilize Jireh’s warranty service you must ship the product, at your expense, to and from Jireh Industries. Before you deliver your product for warranty service you must phone Jireh and obtain an RMA number. This number will be used to process and track your product. Jireh is not responsible for any damage incurred during transit.

EXCLUSIONS AND LIMITATIONS

This Limited Warranty applies only to hardware products manufactured by or for Jireh Industries. This warranty does not apply: (a) to damage caused by accident, abuse, misuse, misapplication, or non-Jireh products; (b) to damage caused by service (including upgrades and expansions) performed by anyone who is not a Jireh Authorized Service Provider; (c) to a product or a part that has been modified without the written permission of Jireh.

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jireh.com

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Changes or modifications to this unit or accessories not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

All specifications are subject to change without notice.

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