

# SAFETY WARNINGS \ PRECAUTIONS

#### **KEEP THIS MANUAL - DO NOT LOSE**

THIS MANUAL IS PART OF THE **STIX** 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 **STIX** is designed for a specific use. Using the **STIX** outside of its intended use could cause damage to the product. Read and understand this manual before using.



**WARNING!** MAGNETIC MATERIAL. The wheels of this device produce a magnetic field which may cause failure or permanent damage to items such as watches, memory devices, CRT monitors, medical devices or other electronics.



People with pacemakers or ICD's must stay at least 25 cm (10 in) away at all times.



**WARNING!** Do **NOT** operate scanner in an explosive environment. Do NOT operate scanner in the presence of volatile substances.



**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 34)

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# IDENTIFICATION

## 1.1. Product Brand

This user manual describes the proper safety precautions, setup and use of the **STIX** manual magnetic corrosion scanner.

# 1.2. Manufacturer

Distributor:		

#### Manufacturer:

Jireh Industries Ltd.

53158 Range Road 224 Ardrossan, Alberta, Canada T8E 2K4

Phone: 780.922.4534

jireh.com

# PRODUCT SPECIFICATIONS

### 2.1. Intended Use

The **STIX** magnetic scanner is a manually operated scanner which provides corrosion scanning.

## 2.1.1. Operating Limits

	Minimum	Maximum
Pipe/tube range, outer diameter (standard)	20.3 cm (8 in)	Flat
Pipe/tube range, outer diameter (reduced)	10.2 cm (4 in)*	Flat

<sup>\* 10.2</sup> cm (4 in) diameter scanning is made possible when using the reduced width of the corrosion link (see Corrosion link adjustment on page 8).

## 2.1.2. Operating environment

The **STIX** magnetic scanner is designed for use in an industrial environment that is between -20° C ( $-4^{\circ}$  F) and 50° C ( $122^{\circ}$  F).

# 2.2. Dimensions and Weight

Encoder cable length (standard kit)	5 m (16.4 in)
Scanner width (Fig. 1-1)	76.7 cm <i>(30.2 in)</i>
Scanner length (Fig. 1-2)	25.4 cm <i>(10 in)</i>
Scanner height (Fig. 1-3)	15 cm (5.9 in)
Scanner weight	3.9 kg (8.6 lb)

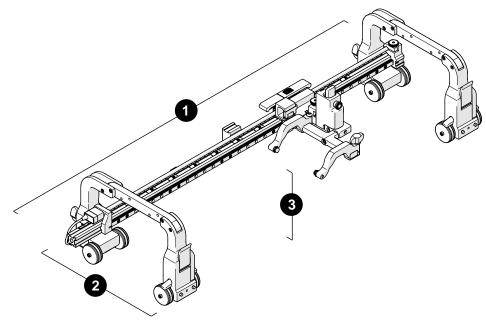


Fig. 1 - Scanner dimensions

# 2.3. Environmental Sealing

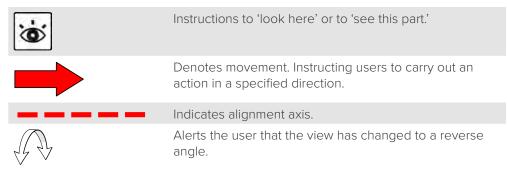
Dust-tight, watertight (not submersible).

# 2.4. Performance Specifications

Scan encoder resolution	16.3 counts/mm (414.5 counts/inch)
Index Encoder resolution	40.3 counts/mm (1023.9 counts/inch)

# **DEFINITIONS**

# 3.1. Definition of Symbols



# SYSTEM COMPONENTS

# 4.1. Component Identification

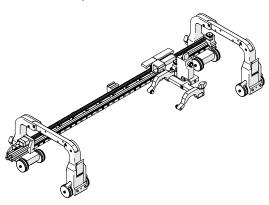


Fig. 2 - STIX - Corrosion scanning BGA012-

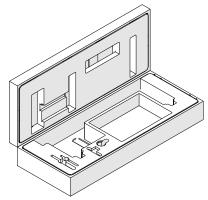


Fig. 3 - STIX corrosion case BGA017



Fig. 4 - J100 Encoder Cable UMA026-

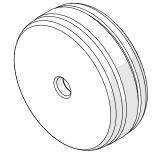


Fig. 5 - Magnetic Wheelt BTS031

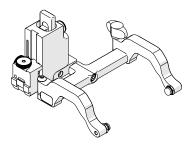


Fig. 6 - Heavy Duty Vertical Probe Holder PHS043-



Fig. 7 - Irrigation Kit CMG007

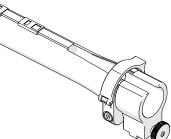


Fig. 8 - Cable management - dovetail mount CES044-

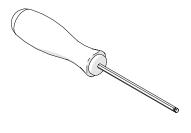


Fig. 9 - 3 mm Hex Driver EA414

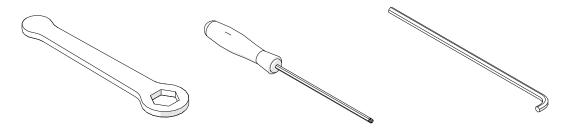


Fig. 10 - 3/8 in wrench **EA470** 

Fig. 11 - 2 mm hex driver EA476

Fig. 12 - Short 2 mm Hex Wrench CE0137

4.2. Tools



Fig. 13 - 2 mm hex driver

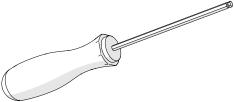


Fig. 14 - 3 mm hex driver

The 2 mm hex driver (Fig. 13) allows for adjustment of the index nuts.

The 3 mm hex driver (Fig. 14) is sufficient for all typical operations and adjustments of the **STIX**.

The 3/8 in wrench (Fig. 15) removes and installs buttons on the probe holders.



Fig. 15 - 3/8 in wrench

### 4.3. Corrosion Link

The corrosion link (Fig. 16) provides braking for the system and an internal encoder connected to the wheels. A connection plug exists for index encoding.

A mounting point for the frame bar is also provided.

The corrosion link length can be adjusted to increase the scanner diameter range and allow for probe clearance.

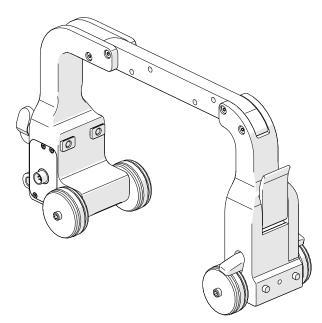


Fig. 16 - Corrosion link

## 4.4. Non-Encoded Corrosion Link

The non-encoded corrosion link (Fig. 17) provides braking for the system.

A mounting point for the frame bar is also provided.

The corrosion link length can be adjusted to increase the scanner diameter range and allow for probe clearance.

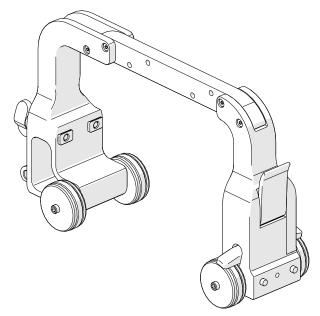


Fig. 17 - Non-Encoded Corrosion link

### 4.4.1. Corrosion link adjustment

To achieve the minimum diameter pipe/tube scan range of 10.2 cm (4 in), the corrosion and non-encoded corrosion links must be adjusted as follows.

**NOTE:** The large yoke of the heavy duty probe holder must be replaced with the standard yoke to allow the carrier to fit under the corrosion links (see Yoke Substitution on page 16).

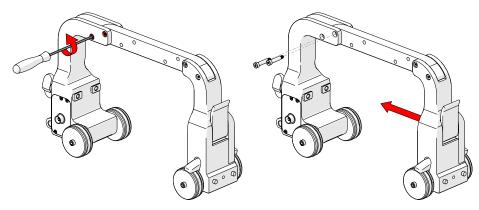


Fig. 18 - Remove shoulder screws

- Use the supplied 2 mm hex driver to remove the two shoulder screws (Fig. 18).
- 2. With the two shoulder screws removed, position the two halves of the corrosion link closer together, align the screw holes and insert the shoulder screws (Fig. 19).
- **3.** Tighten the two shoulder screws with the supplied 2 mm hex driver (Fig. 20).

Fig. 19 - Align screw holes

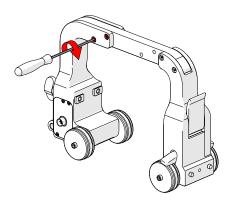


Fig. 20 - Tighten shoulder screws

### 4.4.2. Mounting a Frame Bar

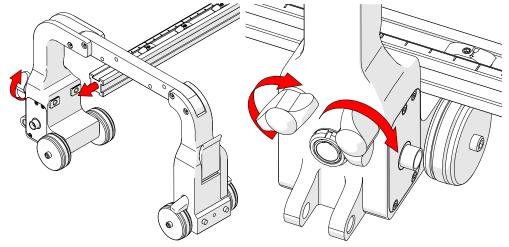


Fig. 21 - Loosen wing knobs

Fig. 22 - Tighten wing knobs

Ensure the two black wing knobs are loose (Fig. 21). Slide the frame bar along the dovetail nuts of the corrosion link (Fig. 21). When the frame bar is positioned where appropriate, tighten the two black wing knobs (Fig. 22).

#### 4.4.3. Index Encoder Connection

The index encoder connection (Fig. 23) is located along the side of the corrosion link. The cable from the PPS encoder (see Index Encoder on page 18) connects to this point.

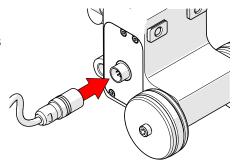


Fig. 23 - Index encoder connection

#### 4.4.4. Encoder Connection

The encoder connection (Fig. 24) is located at the rear of the corrosion link. The encoder cable connects here. The opposite end of the encoder cable connects to the user's instrument.

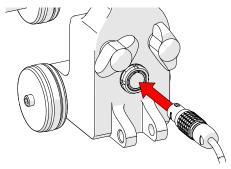


Fig. 24 - Encoder connection

#### 4.4.5. Brake

The red lever on the corrosion and non-encoded corrosion links brake the system. Press the lever down to activate the brake.

**TIP:** When the brake is engaged, and the scanner is moved, this may loosen the wheels from the axle. Grip the wheel tightly and retighten the axle with the 3 mm hex driver.

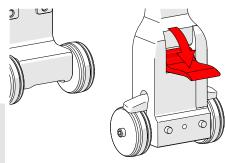


Fig. 25 - Brake

#### 4.4.6. Wheel Removal/Installation

Tightly grip the wheel to be removed by hand. Loosen the wheel from the axle using the supplied 3 mm hex driver (Fig. 14).

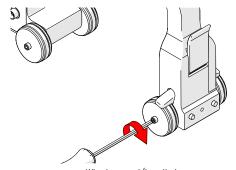


Fig. 26 - Wheel removal/installation



**WARNING!** MAGNETIC MATERIAL. The magnetic wheel kit produce a magnetic field which may cause failure or permanent damage to items such as watches, memory devices, CRT monitors, medical devices or other electronics. People with pacemakers or ICD's must stay at least 25 cm (10 in) away.

### 4.5. Carrier

With the use of a leadscrew, the carrier can move along the length of the frame bar.

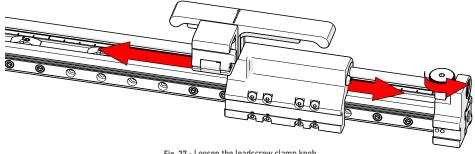


Fig. 27 - Loosen the leadscrew clamp knob

1. Loosen the leadscrew clamp knob (Fig. 27) to allow carrier movement along the frame bar.

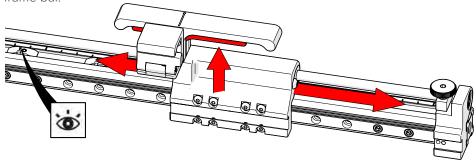
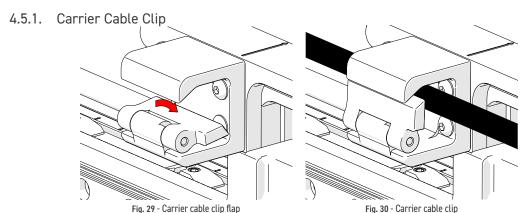


Fig. 28 - Carrier handle latch

2. Press the latch on the carrier handle to position the carrier to the next index location (Fig. 28).



1. Push the cable clip flap down (Fig. 29) to insert the necessary cables and hoses (Fig. 30).

#### 4.5.2. Index Nuts

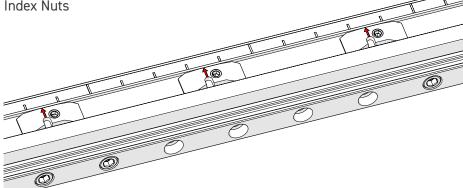


Fig. 31 - Index nuts

The index nuts (Fig. 31) along the frame bar offer index positions during scans.

The arrow found on the carrier's handle references the arrow on the corresponding index nut.

Align the arrows using the ruler to set the desired spacing.

NOTE: The index nuts can be repositioned, and placement of the index nuts works in conjunction with typical probe specifications. Excessive adjustment of the index nuts is not recommended.

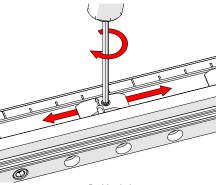


Fig. 32 - Position index nuts

4.6. Heavy Duty Vertical Probe Holder

- A Latch
- B Probe Holder Arm Adjustment Knob
- C Yoke
- D Probe Holder Arms
- E Pivot Buttons
- F Arm Clamp Screw
- G Probe Holder Adjustment Knob
- H Vertical Adjustment Knob

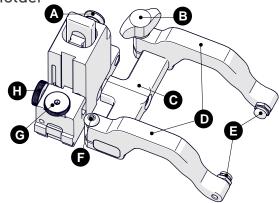


Fig. 33 - Heavy duty vertical probe holder

# 4.6.1. Probe Holder Setup

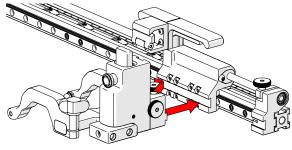


Fig. 34 - Mount probe holder to carrier

Fig. 35 - Vertical adjustment

- **1.** Loosen the probe holder adjustment knob (*Fig. 34*) and mount the heavy duty vertical probe holder's dovetail jaw to the carrier.
- **2.** The vertical adjustment knob (*Fig. 35*) allows height adjustment of the heavy duty vertical probe holder. This adjustment also controls the probe holder's spring tension.

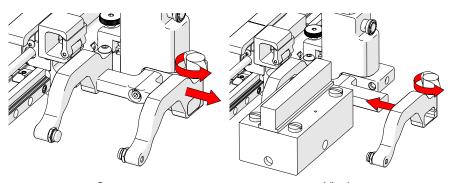
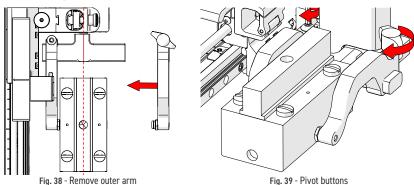


Fig. 36 - Remove outer arm

Fig. 37 - Adjust inner arm

- **3.** Loosen the probe holder adjustment knob and remove the outer probe holder arm (*Fig. 36*).
- **4.** Loosen the arm clamp screw (Fig. 37).
- 5. Place the wedge on the pivot button of the inner probe holder arm (Fig. 37).



- 6. Align the middle of the wedge with the centre of the yoke (Fig. 38).
- 7. Tighten both the probe holder adjustment knob and the arm clamp screw (Fig. 39) while ensuring the wedge remains centred with the yoke.

### 4.6.2. Probe Holder Vertical Adjustment

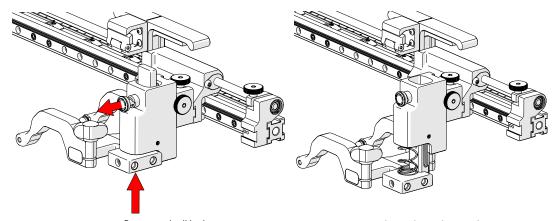
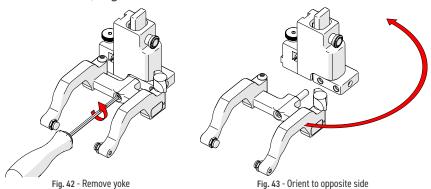


Fig. 40 - Press up and pull latch

Fig. 41 - Lowered toward scan surface

**1.** Gently lift the heavy duty probe holder and simultaneously pull the latch (Fig. 40). This action will unlock the probe holder. Slowly lower the probe holder towards the scan surface (Fig. 41).

### 4.6.3. Probe Holder Left/Right Conversion



- 1. Using the supplied 3 mm driver, unscrew the yoke (Fig. 42).
- **2.** Position the yoke and arms on the opposite side of the probe holder (*Fig. 43*).

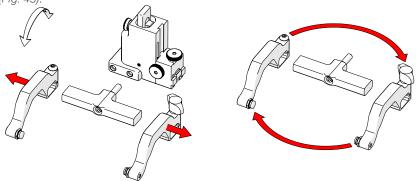


Fig. 44 - Remove probe holder arms

Fig. 45 - Reverse position around yoke

- **3.** Loosen the arm clamp screw and the probe holder arm adjustment knob allowing the removal of the probe holder arms (*Fig. 44*).
- **4.** Position the removed arms to the opposite sides of the yoke (Fig. 45).

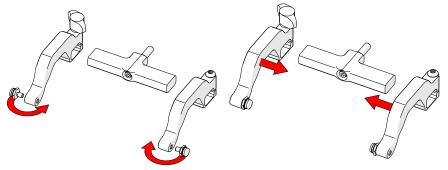


Fig. 46 - Position pivot buttons

Fig. 47 - Remove outer arm

- **5.** Position the pivot buttons to the inside of the probe holder arms (*Fig. 46*).
- **6.** Place the probe holder arms on the yoke and tighten the arm clamp screw and probe holder adjustment knob (Fig. 47).
- **7.** Use the supplied 3 mm driver to screw the yoke to the probe holder.

TIP: Position the yoke in the threaded hole closest to the frame bar when us ing a standard yoke length. Position the yoke in the threaded hole furthest from the frame bar when using a wide yoke length.

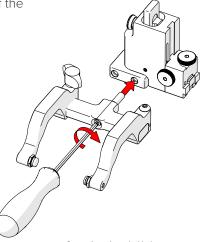


Fig. 48 - Screw into threaded hole

#### 4.6.4. Yoke Substitution

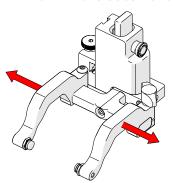


Fig. 50 - Remove probe holder arms

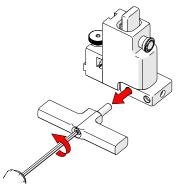


Fig. 51 - Remove yoke

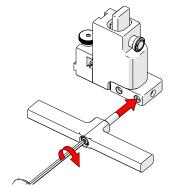


Fig. 52 - Screw into outer threaded hole

- **1.** Loosen the arm clamp screw and the probe holder adjustment knob allowing the removal of the probe holder arms (Fig. 50).
- **2.** Use the supplied 3 mm driver to unscrew the yoke (*Fig. 51*).
- **3.** Choose an alternate size of yoke and screw the yoke to the outer probe holder hole (Fig. 52).
- **4.** Place the probe holder arms on the yoke and tighten the arm clamp screw and probe holder adjustment screw (*Fig. 49*).

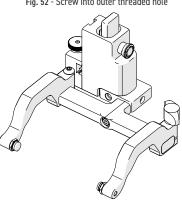


Fig. 49 - Alternate yoke size mounted

### 4.6.5. Probe Holder 90° Adjustment

- **1.** Remove the yoke using the supplied 3 mm driver (Fig. 42).
- **2.** Orient the yoke to the front of the probe holder and screw the yoke into the threaded hole provided (*Fig. 53*).

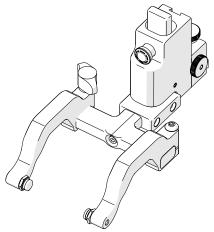


Fig. 53 - 90° probe holder positioning

### 4.7. Frame Bar with Ruler

Frame bars (Fig. 54) are used to mount probe holders, probe positioning systems and other accessories. The frame bar includes a ruler with 1 mm measurements.

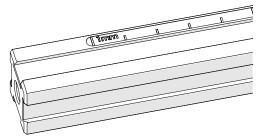


Fig. 54 - Frame bar

## 4.8. Pivot Buttons

Available in a variety of shapes and sizes, fitting various wedge dimensions.

Use the supplied 3/8 in wrench (Fig. 15) to remove and install pivot buttons (Fig. 55).

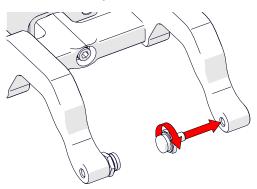
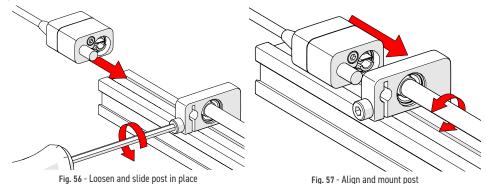


Fig. 55 - Pivot buttons

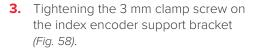
### 4.9. Index Encoder

The index encoder provides positional feedback perpendicular to the scan direction of travel.



- **1.** To install the index encoder, loosen the clamp screw on the encoder with the supplied 3 mm hex driver (Fig. 56).
- **2.** Insert the encoder post in the index encoder support bracket while aligning the leadscrew shaft with the encoder socket (Fig. 57).

**TIP:** You can rotate the leadscrew by hand to assist in the alignment of the encoder socket.



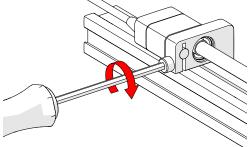


Fig. 58 - Tighten clamp screw

4. Plug the index encoder connector to the corrosion link (Fig. 59).

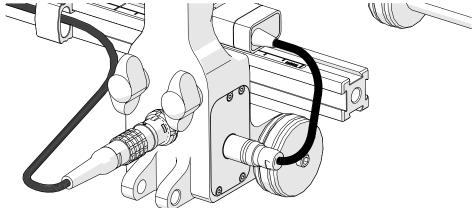
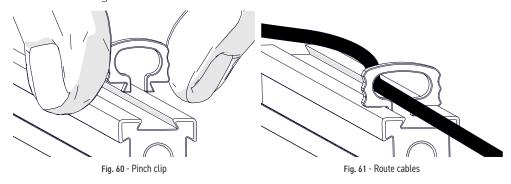


Fig. 59 - Connect index encoder to corrosion link

# 4.10. Cable Clips

Clips have been provided to assist with cable management. Pinch the clip and press it into the dovetail groove of the frame bar.



# 4.11. Cable Management

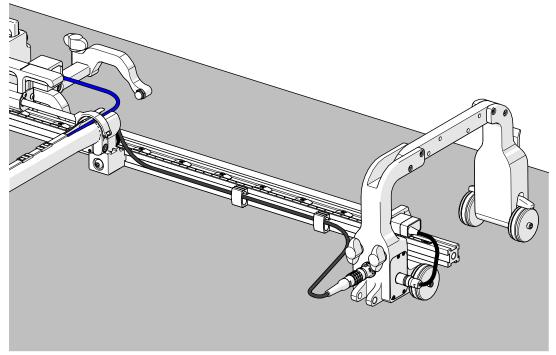
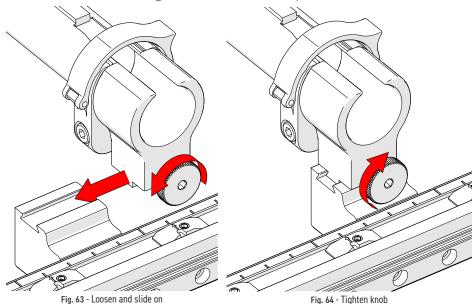


Fig. 62 - Cable management

**TIP:** When using cable management, ensure the dovetail link is placed  $2^{nd}$  in the chain behind the overhead adjustable link.

### 4.11.1. Cable Management Dovetail Mount

To attach the cable management, follow these steps:



- **1.** Loosen the knob on the cable management dovetail mount. Slide the mount onto the dovetail link (Fig. 63).
- 2. Once centred on the dovetail link, tighten the cable management's dovetail mount knob (Fig. 64).

## 4.11.2. Cable Management Setup

The cable management is offered in a variety of lengths and provides a means of bundling and protecting cables and hoses that run to the scanner.

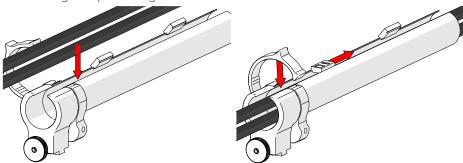


Fig. 65 - Insert cables and hoses

Fig. 66 - Zip up to close

**1.** Open the cable management and cable latch. Begin at the tube's dovetail mount and place the cabling in the tube (*Fig. 65*).

**2.** Follow the cable placement, zipping the tube closed and closing the cable management cable latch (*Fig. 66*).

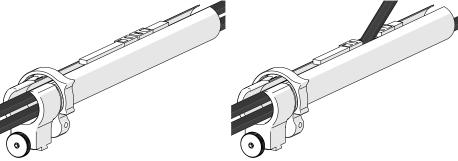


Fig. 67 - Zip opposite end

Fig. 68 - Flexibility

- **3.** Once the cable is placed the entire length of the tube, bring the zipper from the tube's opposite end, meeting at any point in the middle (Fig. 67).
- **4.** When necessary, the two zippers may be opened to allow cables to exit the tube anywhere between the ends (*Fig.* 68).

## 4.11.3. Clamp Setup

If the tube becomes disconnected from the cable management dovetail mount, follow these instructions to re-attach the tube and dovetail mount.

- Loosen the clamp screw using the supplied 3 mm hex driver.
- 2. Slide the clamp around the tube first, then slide the tube around the outside of the cable management dovetail mount (Fig. 69). Align the zipper opening and the cable management dovetail mount opening.
- **3.** Slide the clamp over the tube and cable management dovetail mount, pinching the tube in between (Fig. 70).
- 4. Tighten the clamp screw (Fig. 71).

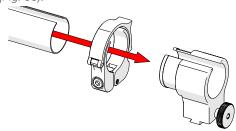


Fig. 69 - Slide tube around mount

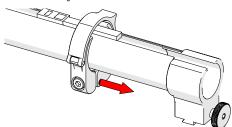


Fig. 70 - Slide clamp onto mount

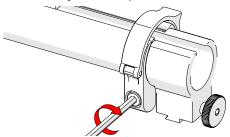
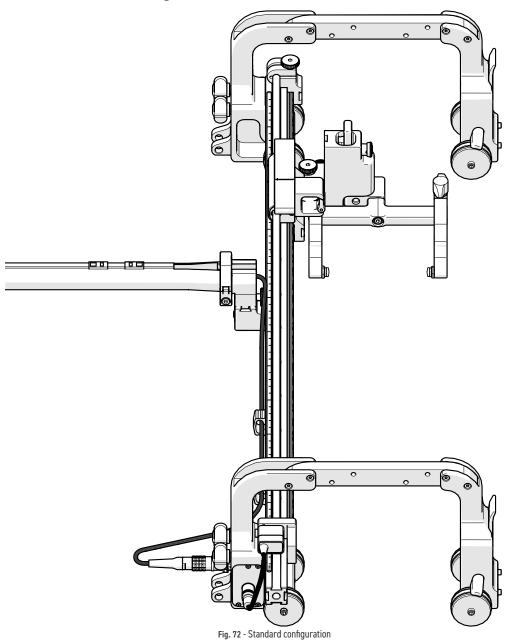


Fig. 71 - Tighten clamp screw

# CONFIGURATION

# 5.1. Standard Configuration



# OPERATION

6.1. Setup of a STIX on a Scanning Surface

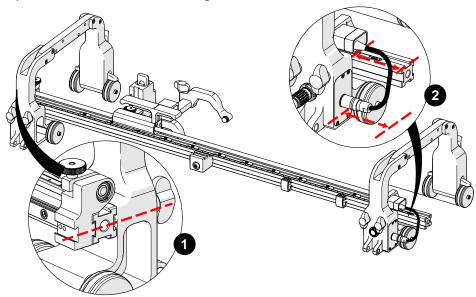


Fig. 73 - Frame bar offers protection for PPS encoder

**1.** Ensure the frame bar extends past the corrosion link (*Fig. 73-2*) on the encoder side. This will protect the index encoder connector. The non-encoded link can be flush with the frame bar (*Fig. 73-1*).

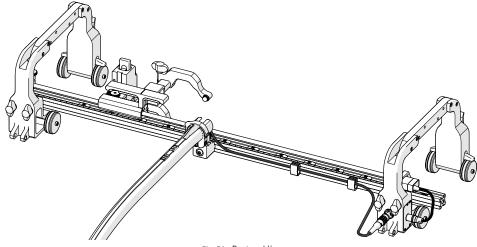
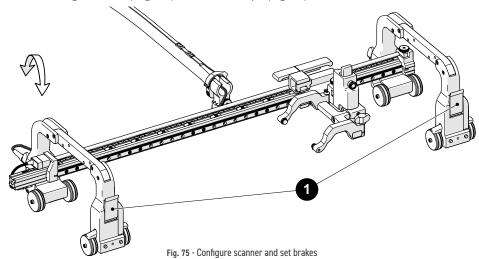


Fig. 74 - Route cabling

2. Plug in the encoder cable to the encoder connection (see Encoder Connection on page 9) and route the encoder cable through the cable management (see Cable Management on page 19) and cable clips (Fig. 74).



- 3. Install the wedge (see Heavy Duty Vertical Probe Holder on page 13) in the probe holder.
- **4.** Ensure the brakes (Fig. 75-1) are activated (see Brake on page 10) on both

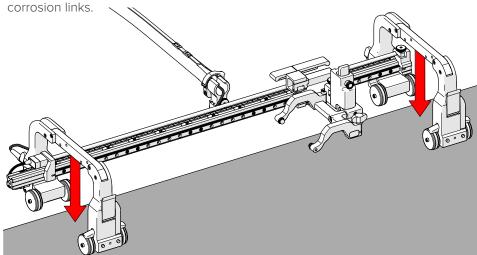


Fig. 76 - Place scanner on scan surface

5. Place the STIX on the scanning surface (Fig. 76).

**TIP:** Use caution when placing equipment on the scan surface. The magnetized wheels can cause the assembly to lurch towards the metal suddenly.

# MAINTENANCE

General cleaning of components is important to keep your system working well. All components that have no wiring or cables are completely 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.

**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 encoder is not functioning.	The instrument is not set up correctly.	Refer to the instrument's documentation regarding proper setup.
	An issue with the encoder.	Contact Jireh Industries for repair (see Jireh Industries Ltd. on page 1).

# 8.1. Technical Support

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

# 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.

# SPARE PARTS

To order accessories or replacement parts for your **STIX** system. (contact Jireh Industries Ltd. on page 1)

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

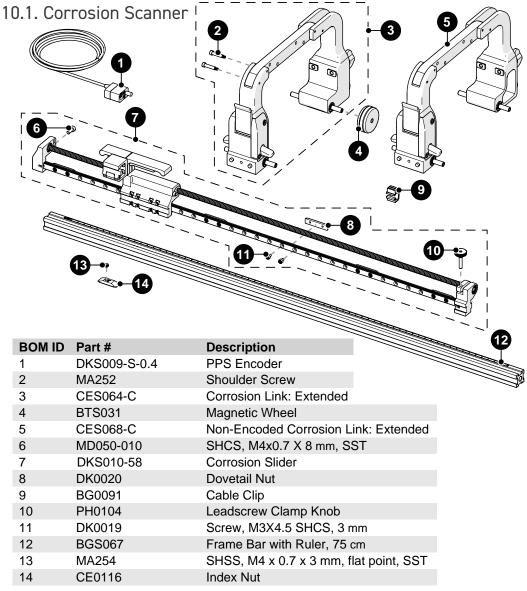


Fig. 77 - STIX corrosion scanner parts

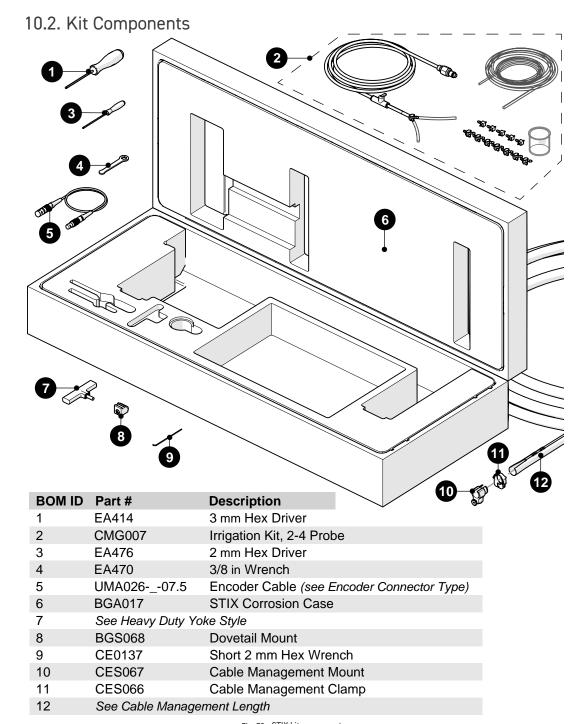


Fig. 78 - STIX kit components

## 10.2.1. Encoder Connector Type

Connector Type	Company/Instrument	Connector Type	Company/Instrument
В	Olympus OmniScan MX Zetec Topaz	G	Sonotron Isonic 25xx
С	Olympus Focus LT Zetec Z-Scan Eddyfi Ectane 2	U	Sonatest Veo / Prisma
E	Olympus OmniScan SX/MX2/X3 M2M MANTIS/GEKKO LEMO	V	Pragma PAUT
F	TD (Technology Design)	AD	Sonatest Veo / Prisma - Single Axis

**NOTE:** Additional encoder connector styles are available. (contact Jireh Industries Ltd. on page 1)

## 10.2.3. Cable Management Length

Part #	Length
CX0226	7 m (22.9 ft)

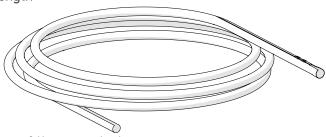


Fig. 79 - Cable management length

## 10.3. Accessories

# 10.3.1. Magnetic Wheel Kit

Fig. 80 - Magnetic wheel kit

## 10.3.2. Preamp Bracket

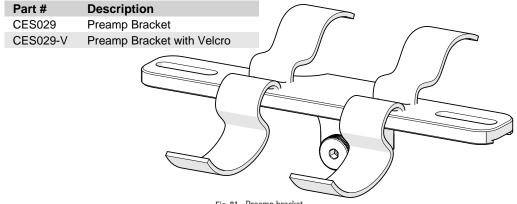


Fig. 81 - Preamp bracket

## 10.3.3. HydroFORM™ Cart

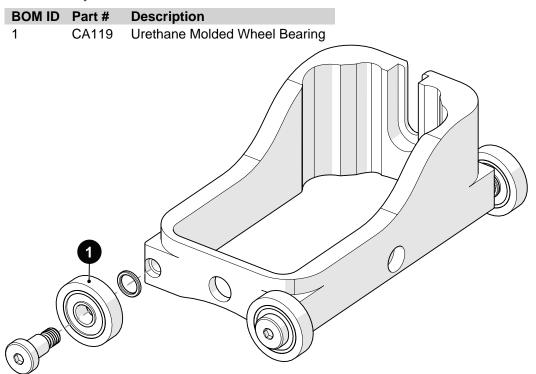
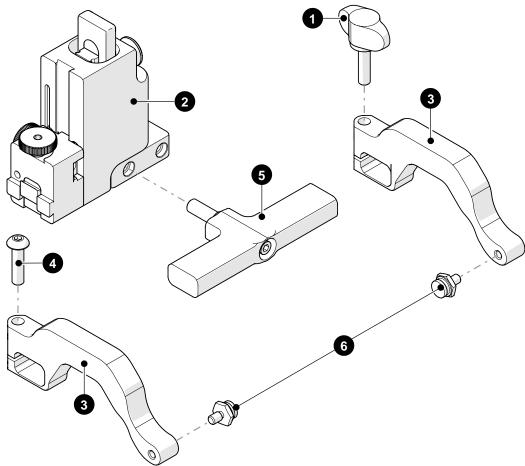


Fig. 82 - HydroFORM™ wheel replacement

# 10.4. Heavy Duty Vertical Probe Holder



	_	
BOM ID	Part #	Description
1	EA154	Probe Holder Arm Adjustment Knob
2	PHS049	Heavy Duty Probe Holder Subassembly
3	PH0165	Heavy Duty Probe Holder Arm, Standard, Drop
4	MD074-020	BHCS, M5 x 0.8 x 20 mm, SST
5	See Heavy Duty	Yoke Style
6	PH0011	Pivot Button Style (See Pivot Button Style)

Fig. 83 - Heavy duty vertical probe holder

# 10.5. Probe Holder Components

## 10.5.1. Heavy Duty Yoke Style

	Yoke Style	Part #	Length		Yoke Style	Part #	Length	
S	Standard	PHS048	8.3 cm (3.26 in)	W	Wide	PHS047	12.2 cm (4.79 in)	

Fig. 84 - Heavy duty probe holder yoke selection

## 10.5.2. Pivot Button Style

	Pivot Hole Size	Wedge Type		Pivot Hole Size	Wedge Type	
01	8.0 mm (0.315 in)	Olympus PA	02	5.0 mm (0.197 in)	Olympus TOFD	
03	2.7 mm (0.106 in)	Sonatest DAAH PA	04	9.5 mm (0.375 in)	-	
06	3.0 mm (0.118 in)	-	07	2.3 mm (0.09 in)	-	<b></b>
08	Conical Head	-	09	5 mm (0.197 in) Internal	Zetec PA/TOFD	
11	3 mm (0.118 in) Interna	al -	14	4 mm (0.157 in)	-	<b>M</b>

Fig. 85 - Probe holder button selection

**NOTE:** Additional probe holder pivot button types are available. (contact Jireh Industries Ltd. on page 1)

# DISPOSAL

#### **WEEE Directive**

In accordance with European Directive on Waste Electrical and Electronic Equipment (WEEE), this symbol indicates 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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All specifications are subject to change without notice.

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