



STIX

BG0100 Rev 02.4
Magnetic Corrosion Scanner

JIREH
SCANNING TECHNOLOGY FOR NDT

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.



DANGER! 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.



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 21)

DISTRIBUTOR:

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TABLE OF CONTENTS

1	Introduction	1
	1.1. Product information	1
	1.1.1. Intended use	1
	1.1.2. Performance specifications	1
	1.1.3. Operating environment	1
	1.1.4. Environmental Sealing	1
	1.2. Definition of symbols	1
	1.3. Hardware	2
	1.3.1. Included tools	2
	1.3.2. Maintenance	2
2	Configuration	3
	2.1. Standard Configuration	3
3	Operation	4
	3.1. Setup of a STIX on a Scanning Surface	4
4	System Components	6
	4.1. Corrosion Link	6
	4.2. Non Encoded Corrosion Link	6
	4.2.1. Corrosion link adjustment	7
	4.2.2. Mounting a Frame Bar	8
	4.2.3. Index Encoder Connection	8
	4.2.4. Encoder Connection	8
	4.2.5. Brake	9
	4.2.6. Wheel Removal/Installation	9
	4.3. Carrier	10
	4.3.1. Carrier Cable Clip	10
	4.3.2. Index Nuts	11
	4.4. Heavy Duty Vertical Probe Holder	12
	4.4.1. Probe Holder Setup	12
	4.4.2. Probe Holder Vertical Adjustment	13
	4.4.3. Probe Holder Left/Right Conversion	14
	4.4.4. Probe Holder 90° Adjustment	15
	4.5. Frame Bar with Ruler	15
	4.6. Pivot Buttons	16
	4.7. Index Encoder	17
	4.8. Cable Clips	18

4.9.	Cable Management System	18
4.9.1.	Zipper Tube Dovetail Mount	19
4.9.2.	Zipper Tube Setup	19
4.9.3.	Clamp Setup	20

5

Service and Repair 21

5.1.	Troubleshooting	21
5.2.	Technical Support	21
5.3.	Disposal	21

6

Spare Parts 22

6.1.	Corrosion Scanner	22
6.2.	Kit Components	23
6.2.1.	Encoder Connector Type	24
6.2.2.	Zipper Tube Length	24
6.3.	Accessories	24
6.3.1.	Magnetic Wheel Kit	24
6.3.2.	Pre-Amp Bracket	25
6.3.3.	HydroFORM™ Cart	25
6.4.	Heavy Duty Vertical Probe Holder	26
6.5.	Probe Holder Components	27
6.5.1.	Heavy Duty Yoke Style	27
6.5.2.	Pivot Button Style	27

7

Limited Warranty 28

INTRODUCTION

1.1. Product information

1.1.1. Intended use

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

1.1.2. Performance specifications

	<i>Minimum</i>	<i>Maximum</i>
Scanner pipe/tube range	10.2 cm (4 in)*	96.5 mm (38 in)
Umbilical length (Standard kit)	5 m (16.4 in)	
Scan encoder resolution	16.3 counts/mm (414.5 counts/inch)	
Index Encoder resolution	40.3 counts/mm (1023.9 counts/inch)	

* 4 in diameter scanning is only made possible when using the reduced width of the corrosion link (see *Corrosion link adjustment on page 7*).

1.1.3. Operating environment

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

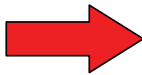
1.1.4. Environmental Sealing

Dust tight, water tight (*not submersible*).

1.2. Definition of symbols



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



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



Indicates alignment axis.



Alerts user that view has changed to a reverse angle.

1.3. Hardware

1.3.1. Included tools

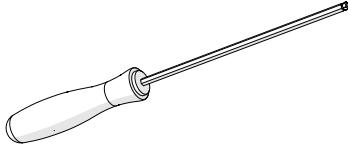


Fig. 1 - 2 mm hex driver

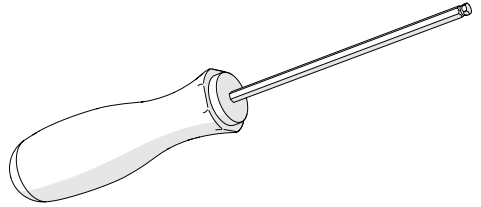


Fig. 2 - 3 mm hex driver

The 2 mm hex driver (*Fig. 1*) allows for adjustment of the index nuts. The 3 mm hex driver (*Fig. 2*) is sufficient for all typical operations and adjustments of the **STIX**. The 3/8 in wrench (*Fig. 3*) is used to remove and install buttons on the probe holders.



Fig. 3 - 3/8 in wrench

1.3.2. 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 splash proof. However, these components are **NOT** submersible.

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

CONFIGURATION

2.1. Standard Configuration

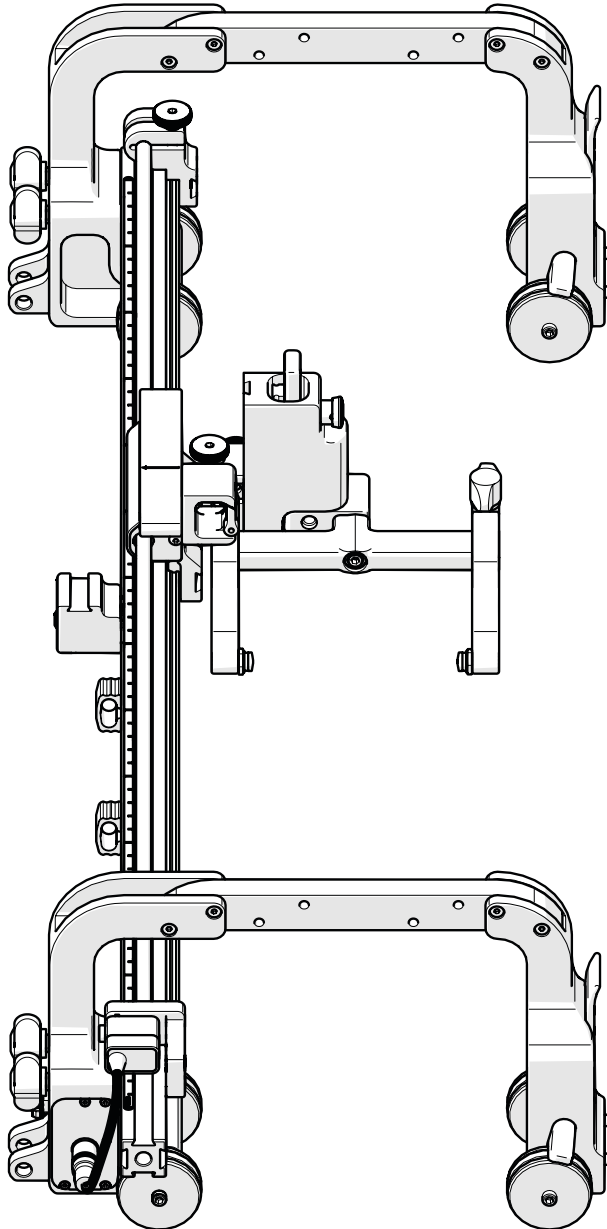


Fig. 4 - Standard configuration

OPERATION

3.1. Setup of a STIX on a Scanning Surface

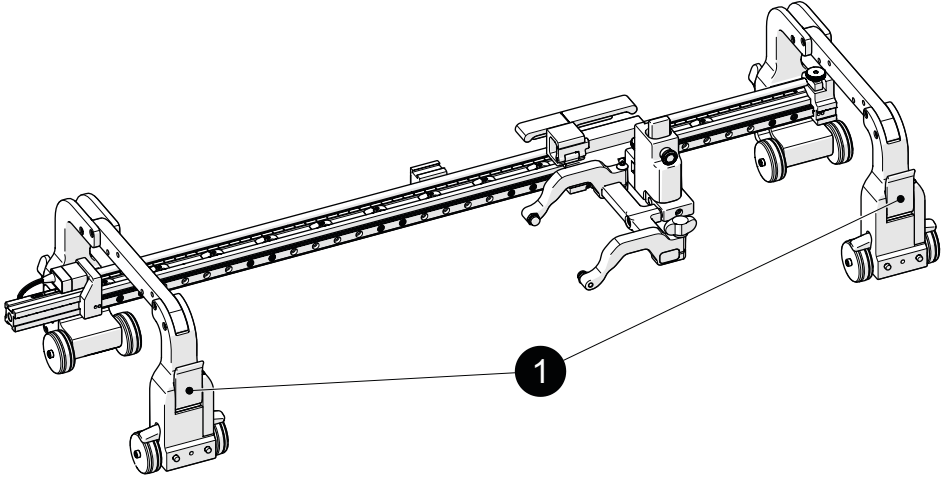


Fig. 5 - Configure scanner and set brakes

1. Ensure the appropriate configuration is setup (*Fig. 5*). Install the wedge to be used in the probe holder (*see Heavy Duty Vertical Probe Holder on page 12*).
2. Ensure the brakes (*Fig. 5-1*) are activated (*see Brake on page 9*) on both corrosion links.

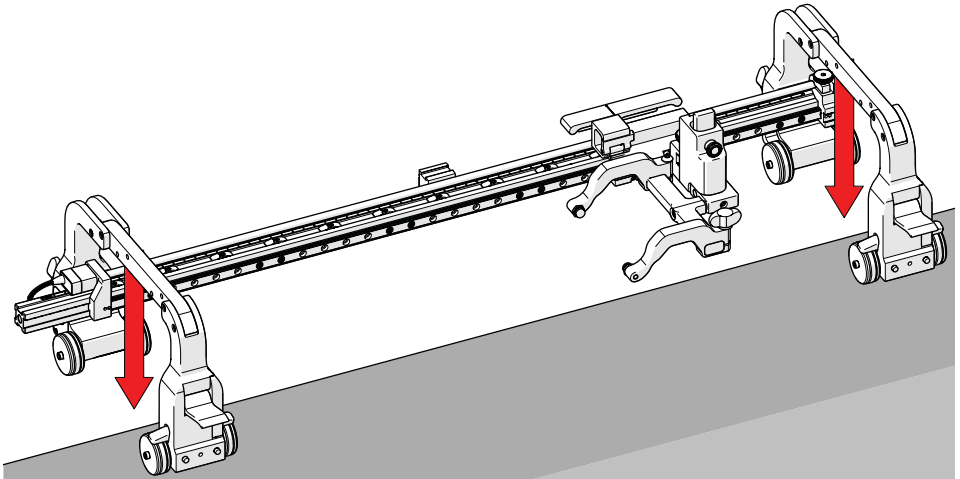


Fig. 6 - Place scanner on scan surface

3. Place the **STIX** on the scanning surface (*Fig. 6*).

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

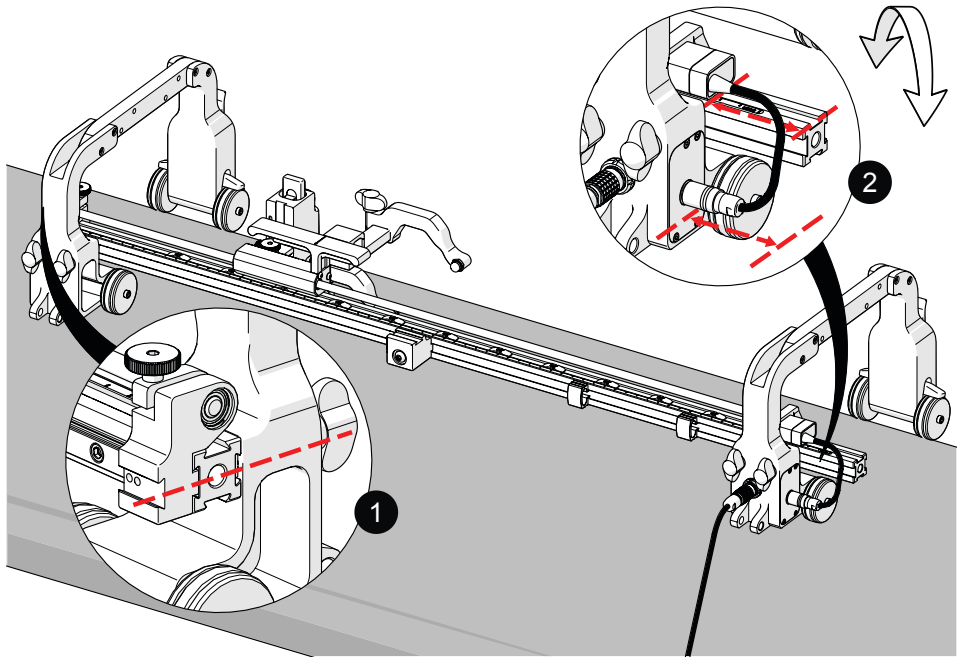


Fig. 7 - Frame bar offers protection for PPS encoder

4. Ensure the frame bar extends past the corrosion link (*Fig. 7-2*) on the encoder side. This will provide protection to the index encoder connector. The non encoded link can be flush with the frame bar (*Fig. 7-1*).

SYSTEM COMPONENTS

4.1. Corrosion Link

The corrosion link (Fig. 8) provides braking for the system as well as 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 scanner diameter range as well as allowing for probe clearance.

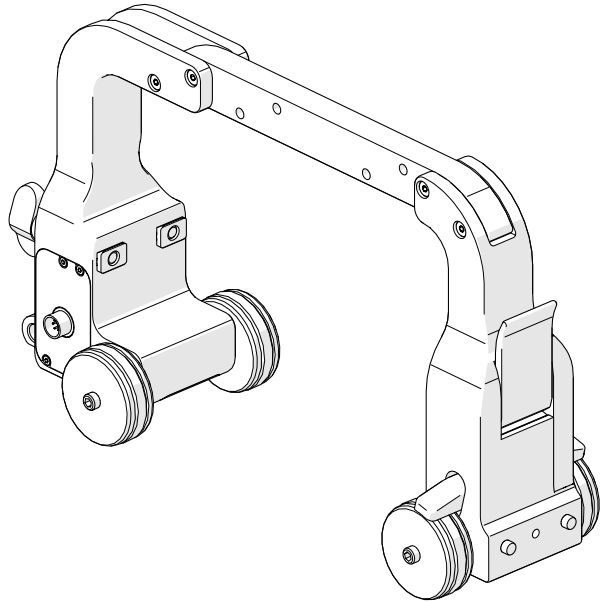


Fig. 8 - Corrosion link

4.2. Non Encoded Corrosion Link

The non encoded corrosion link (Fig. 9) provides braking for the system.

A mounting point for the frame bar is also provided.

The corrosion link length can be adjusted to increase scanner diameter range as well as allowing for probe clearance.

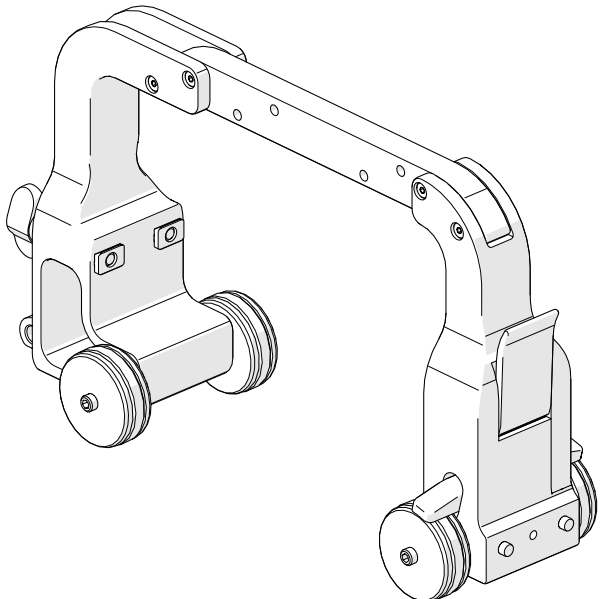


Fig. 9 - Non Encoded Corrosion link

4.2.1. Corrosion link adjustment

NOTE: Adjusting the corrosion link to a wider configuration limits the minimum diameter scan capabilities to 20.32 cm (8 in).

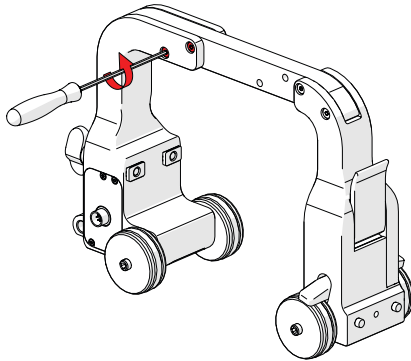


Fig. 10 - Remove shoulder screws

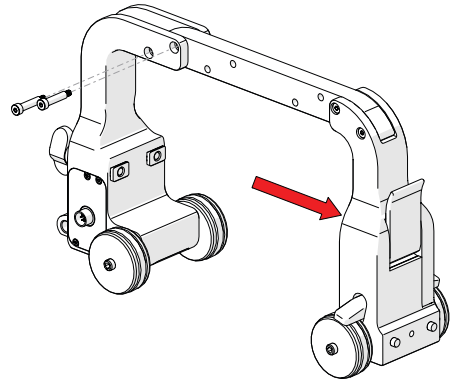


Fig. 11 - Align screw holes

1. Use the supplied 2 mm hex driver to remove the 2 shoulder screws (Fig. 10).
2. With the 2 shoulder screws removed, position the two halves of the corrosion link further apart and align the screw holes and insert the shoulder screws (Fig. 11).
3. Tighten the 2 shoulder screws with the supplied 2 mm hex driver (Fig. 12).

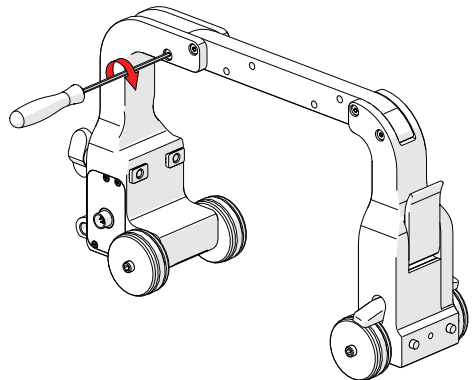


Fig. 12 - Tighten shoulder screws

4.2.2. Mounting a Frame Bar

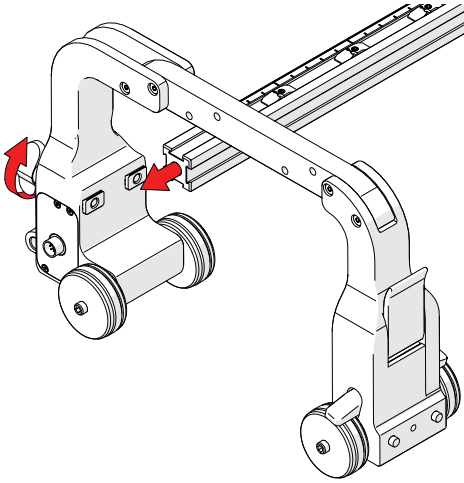


Fig. 13 - Loosen wing knobs

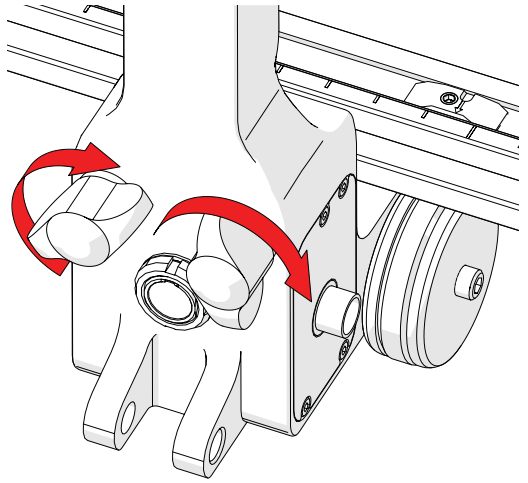


Fig. 14 - Tighten wing knobs

Ensure the two black wing knobs are loose (*Fig. 13*). Slide the frame bar along the dovetail nuts of the corrosion link (*Fig. 13*). When the frame bar is positioned where appropriate, tighten the two black wing knobs (*Fig. 14*).

4.2.3. Index Encoder Connection

The index encoder connection (*Fig. 15*) is located along the side of the corrosion link. The cable from the PPS encoder (see *Index Encoder on page 17*) connects to this point.

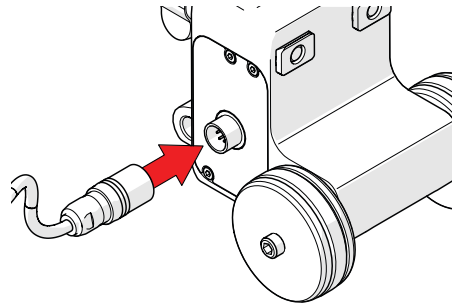


Fig. 15 - Index encoder connection

4.2.4. Encoder Connection

The encoder connection (*Fig. 16*) is located at the rear of the corrosion link. The encoder cable connects here. The opposite end of the encoder cable connects to the users instrument.

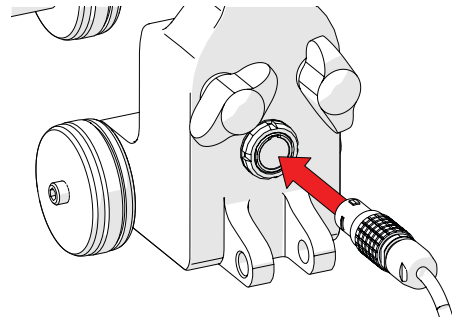


Fig. 16 - Encoder connection

4.2.5. Brake

The red lever located on the both the corrosion link and non encoded corrosion link provide braking to 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.*

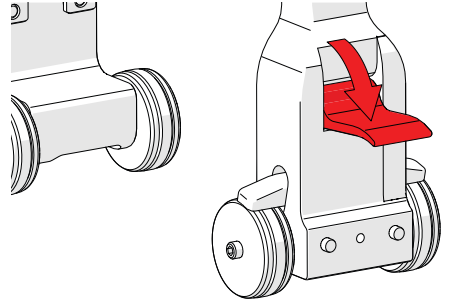


Fig. 17 - Brake

4.2.6. Wheel Removal/Installation

Tightly grip the wheel to be removed by hand. Using the supplied 3 mm hex driver (Fig. 2), loosen the wheel from the axle.

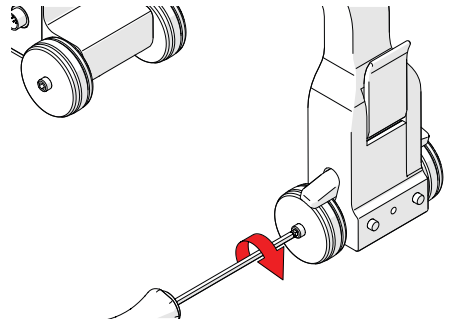


Fig. 18 - Wheel removal/installation



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.

4.3. Carrier

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

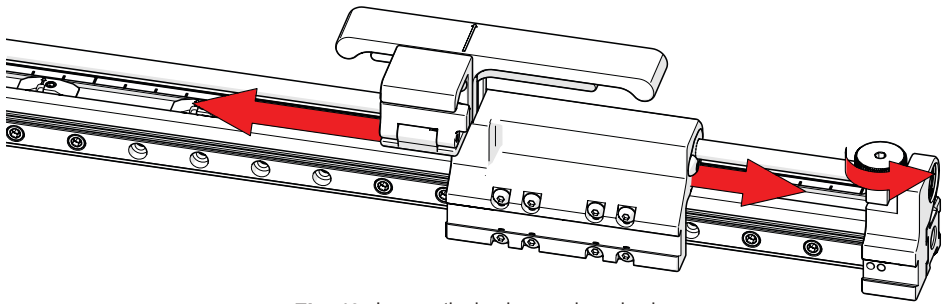


Fig. 19 - Loosen the leadscrew clamp knob

1. Loosen the leadscrew clamp knob (*Fig. 19*) to allow movement of the carrier along the frame bar.

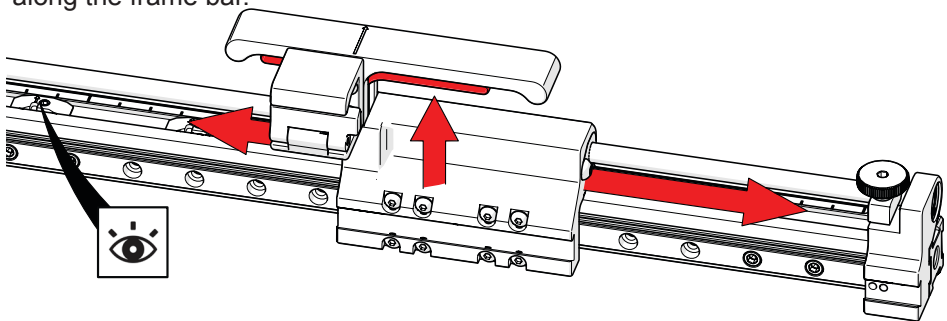


Fig. 20 - Carrier handle latch

2. Press the latch on the carrier handle to position the carrier to the next index location (*Fig. 20*).

4.3.1. Carrier Cable Clip

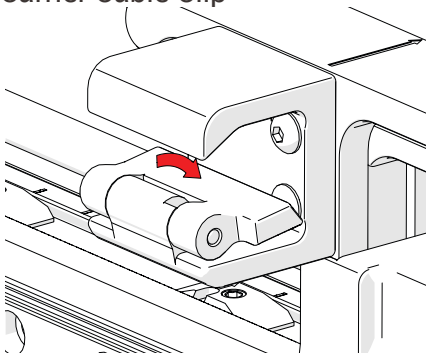


Fig. 21 - Carrier cable clip flap

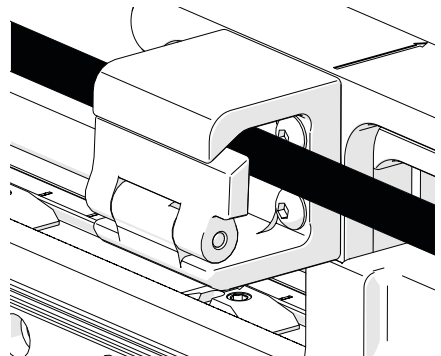


Fig. 22 - Carrier cable clip

1. Push the cable clip flap down (*Fig. 21*) to insert the necessary cables and hoses (*Fig. 22*).

4.3.2. Index Nuts

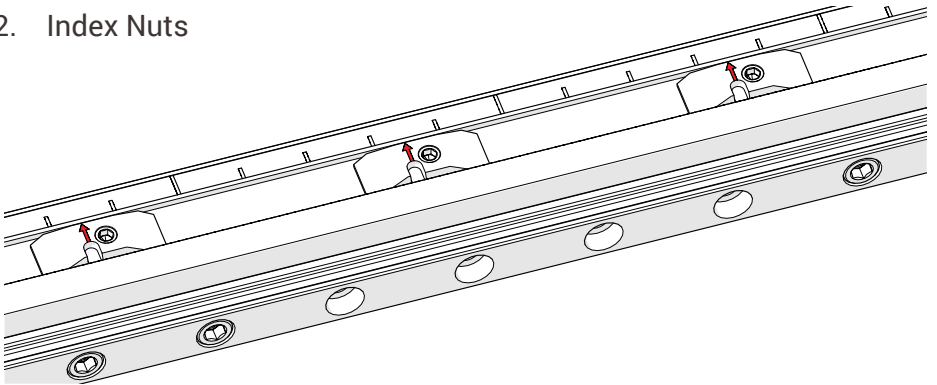


Fig. 23 - Index nuts

The index nuts (Fig. 23) located along the frame bar offer index positions during scans.

The arrow found on the handle of the carrier 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, placement of the index nuts works in conjunction with common probe specifications. Excessive adjustment of the index nuts is not recommended.

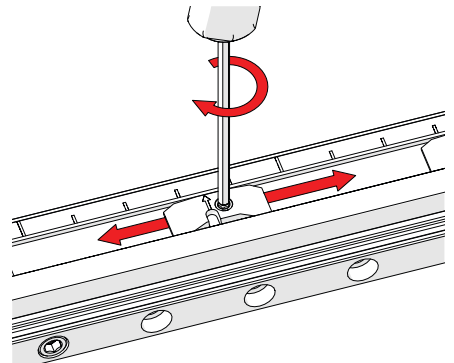


Fig. 24 - Position index nuts

4.4. 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

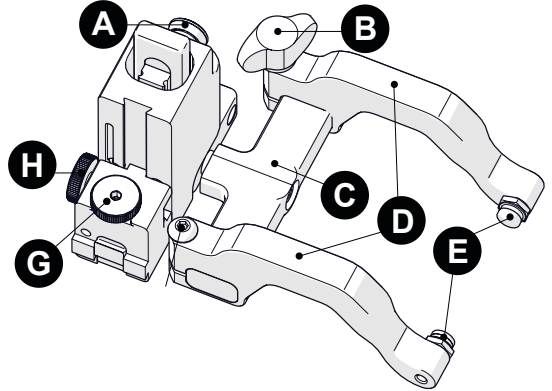


Fig. 25 - Heavy duty vertical probe holder

4.4.1. Probe Holder Setup

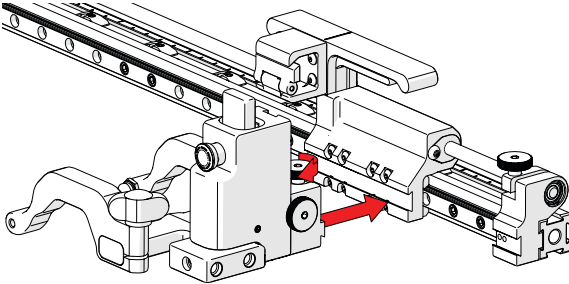


Fig. 26 - Mount probe holder to carrier

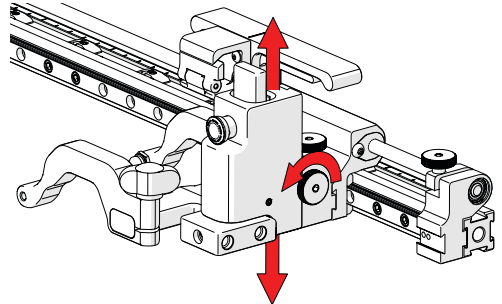


Fig. 27 - Vertical adjustment

1. Loosen the probe holder adjustment knob (Fig. 26) and mount the heavy duty vertical probe holder's dovetail jaw to the carrier.
2. The vertical adjustment knob (Fig. 27) allows the heavy duty vertical probe holder's height adjustment. This adjustment also controls the probe holders spring tension.

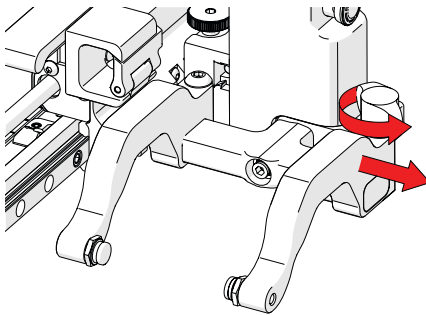


Fig. 28 - Remove outer arm

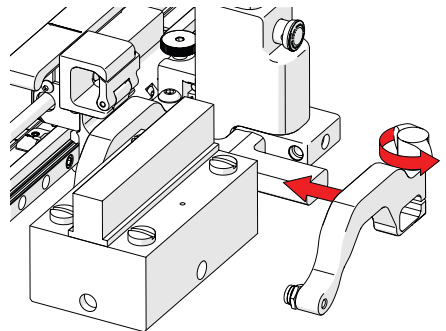


Fig. 29 - Adjust inner arm

3. Loosen the probe holder adjustment knob and remove the outer probe holder arm (Fig. 28).
4. Loosen the arm clamp screw (Fig. 29).
5. Place the wedge on the pivot button of the inner probe holder arm (Fig. 29).

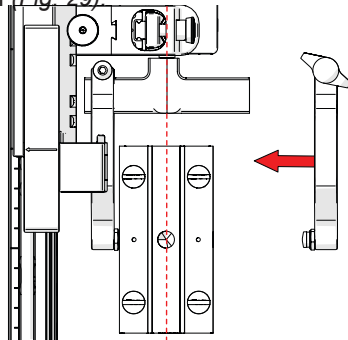


Fig. 30 - Remove outer arm

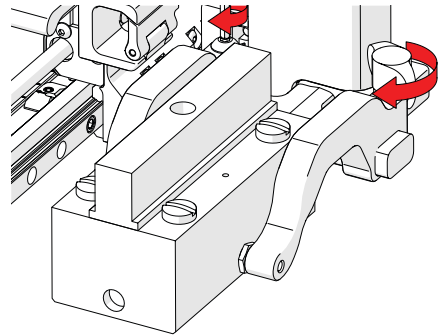


Fig. 31 - Pivot buttons

6. Align the middle of the wedge with the centre of the yoke (Fig. 30).
7. Tighten both the probe holder adjustment knob and the arm clamp screw (Fig. 31) while ensuring the wedge remains centred with the yoke.

4.4.2. Probe Holder Vertical Adjustment

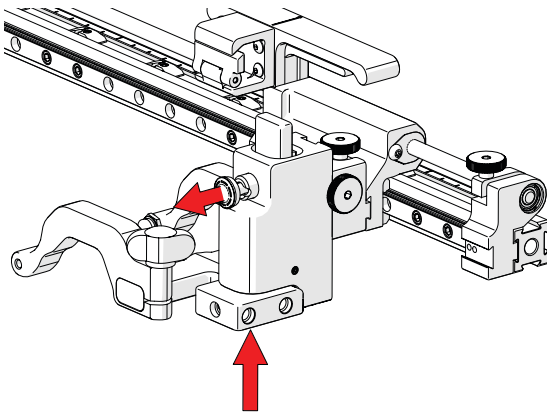


Fig. 32 - Press up and pull latch

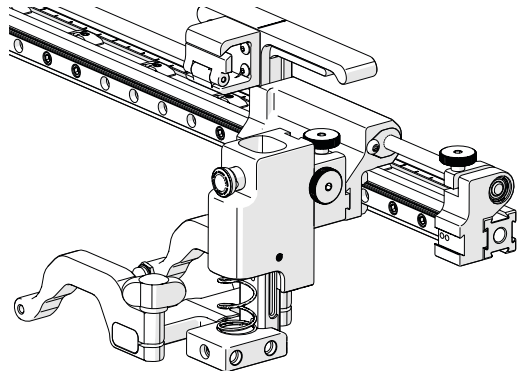


Fig. 33 - Lowered toward scan surface

1. Gently lift the heavy duty probe holder and simultaneously pull the latch (Fig. 32). This action will unlock the probe holder. Slowly lower the probe holder towards the scan surface (Fig. 33).

4.4.3. Probe Holder Left/Right Conversion

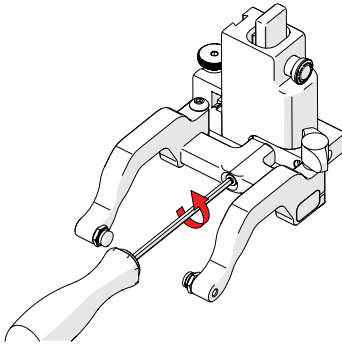


Fig. 34 - Remove yoke

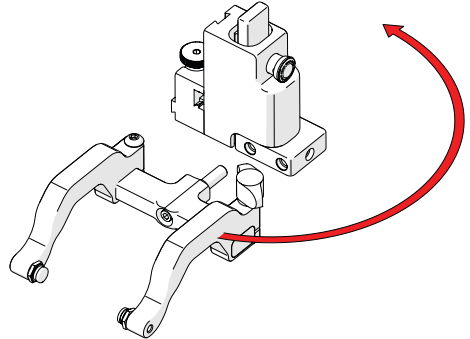


Fig. 35 - Orient to opposite side

1. Using the supplied 3 mm driver, unscrew the yoke (*Fig. 34*).
2. Position the yoke and arms to the opposite side of the probe holder (*Fig. 35*).

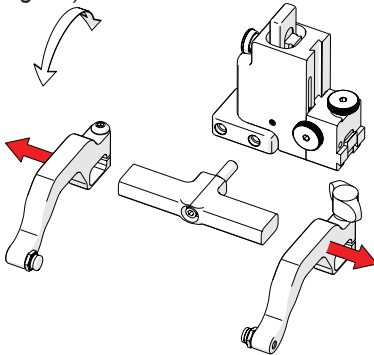


Fig. 36 - Remove probe holder arms

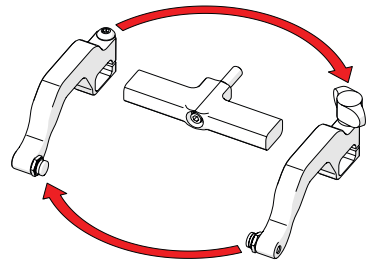


Fig. 37 - Reverse position around yoke

3. Loosen the arm clamp screw and the probe holder arm adjustment knob allowing removal of the probe holder arms (*Fig. 36*).
4. Position the removed arms to the opposite sides of the yoke (*Fig. 37*).

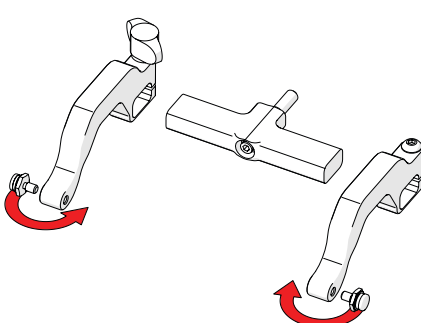


Fig. 38 - Position pivot buttons

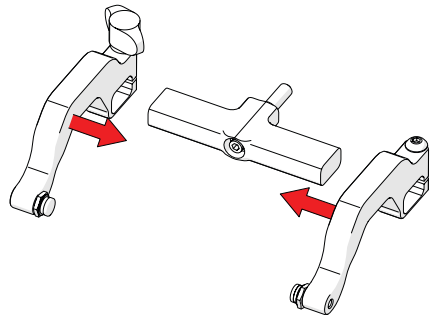


Fig. 39 - Remove outer arm

5. Position the pivot buttons to the inside of the probe holder arms (Fig. 38).
6. Place the probe holder arms on the yoke and tighten the arm clamp screw and probe holder adjustment knob (Fig. 39).
7. Use the supplied 3 mm driver to screw the yoke to the probe holder.

TIP: When using a standard yoke length, position the yoke in the threaded hole closest to the frame bar. When using a long yoke length, position the yoke in the threaded hole furthest from the frame bar.

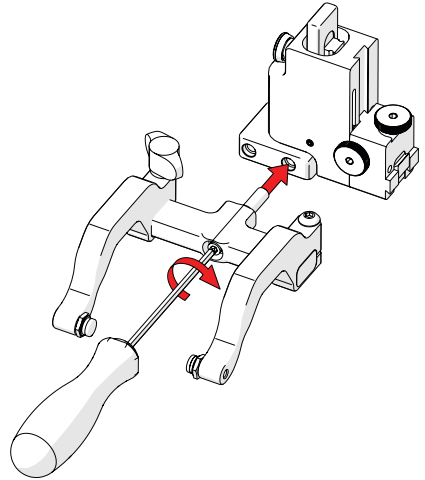


Fig. 40 - Screw into threaded hole

4.4.4. Probe Holder 90° Adjustment

1. Remove the yoke using the supplied 3 mm driver (Fig. 34).
2. Orient the yoke to the front of the probe holder and screw the yoke into the threaded hole provided (Fig. 41).

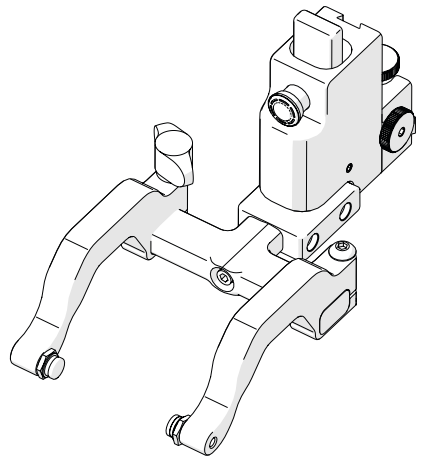


Fig. 41 - 90° probe holder positioning

4.5. Frame Bar with Ruler

Frame bars (Fig. 42) are used to mount probe holders, probe positioning systems and other accessories. The frame bar includes a ruler with 1 mm measurements.

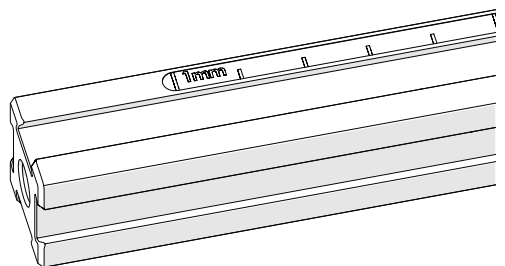


Fig. 42 - Frame bar

4.6. Pivot Buttons

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

Use the supplied 3/8 in wrench (Fig. 3) to remove and install pivot buttons (Fig. 43).

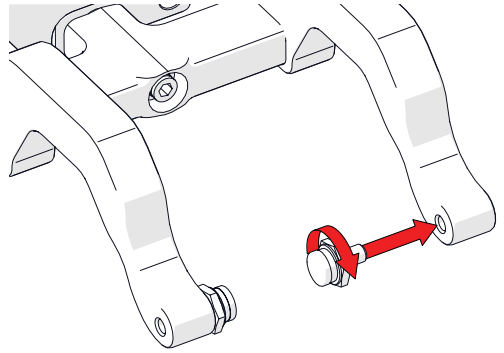


Fig. 43 - Pivot buttons

4.7. Index Encoder

The index encoder is used to provide positional feedback perpendicular to the scan direction of travel.

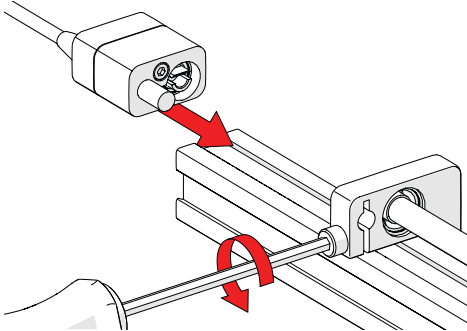


Fig. 44 - Loosen and slide post in place

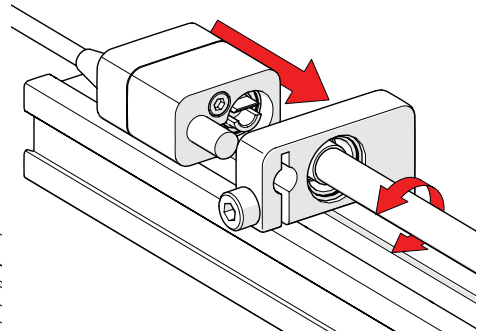


Fig. 45 - Align and mount post

1. To install the index encoder, loosen the clamp screw on the encoder with the supplied 3 mm hex driver (*Fig. 44*).
2. Insert the encoder post in the index encoder support bracket while aligning the leadscrew shaft with the encoder socket (*Fig. 45*).

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

3. Tightening the 3 mm clamp screw on the index encoder support bracket (*Fig. 46*).

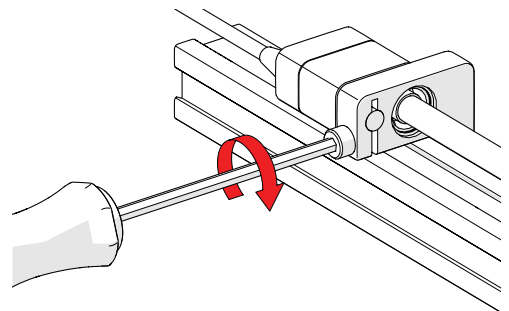


Fig. 46 - Tighten clamp screw

4. Plug the index encoder connector to the corrosion link (*Fig. 47*).

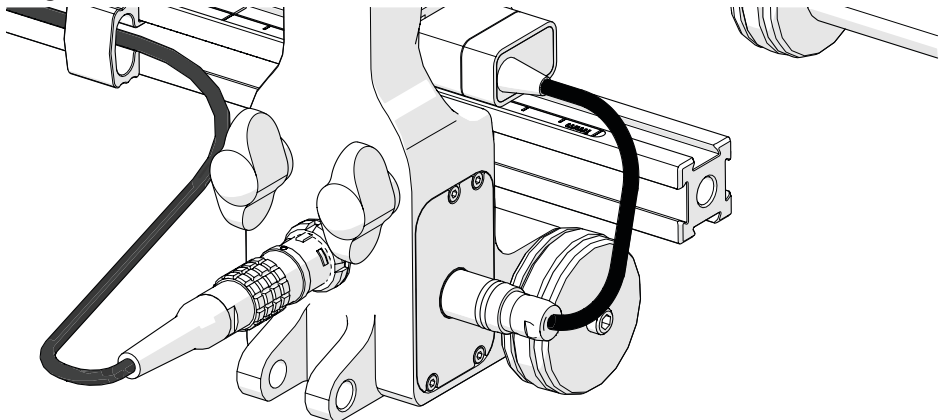


Fig. 47 - Connect index encoder to corrosion link

4.8. Cable Clips

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

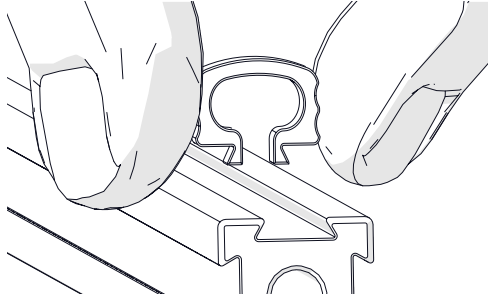


Fig. 48 - Pinch clip

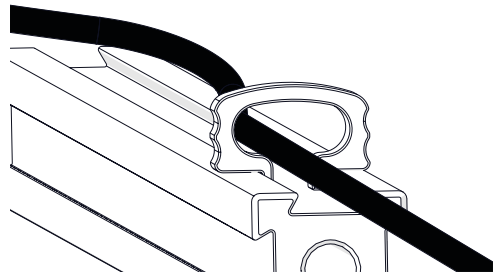


Fig. 49 - Route cables

4.9. Cable Management System

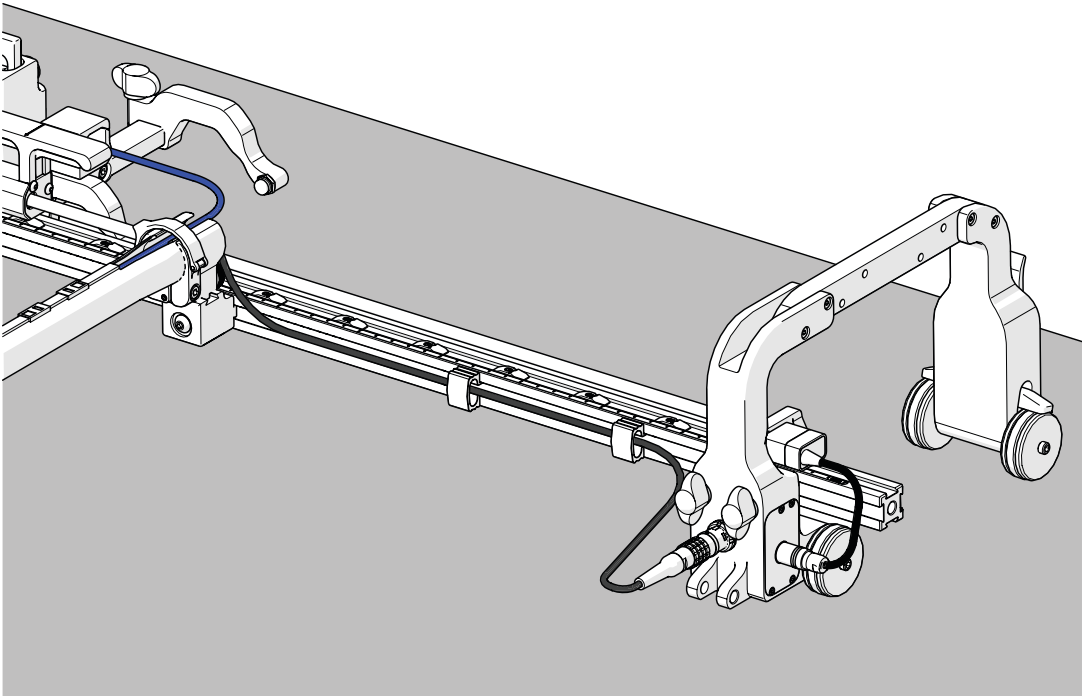


Fig. 50 - Cable management

TIP: When using the zipper tube, ensure the dovetail link is placed 2nd in the chain behind the overhead adjustable link.

4.9.1. Zipper Tube Dovetail Mount

To attach a zipper tube for cable management, follow these steps:

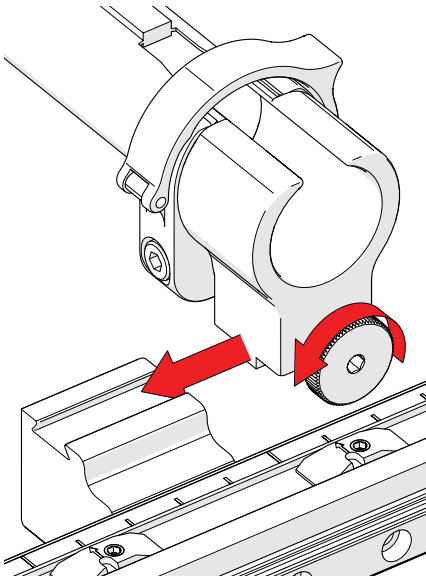


Fig. 51 - Loosen and slide on

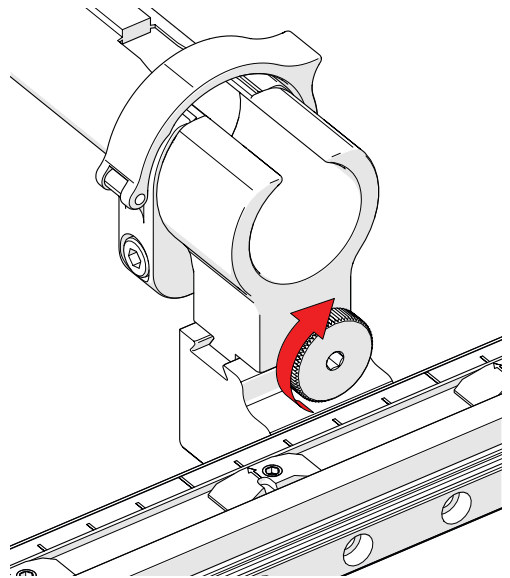


Fig. 52 - Tighten knob

1. Loosen the knob on the zipper tube dovetail mount. Slide the mount onto the dovetail link (*Fig. 51*).
2. Once centred on the dovetail link, tighten the zipper tube's dovetail mount knob (*Fig. 52*).

4.9.2. Zipper Tube Setup

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

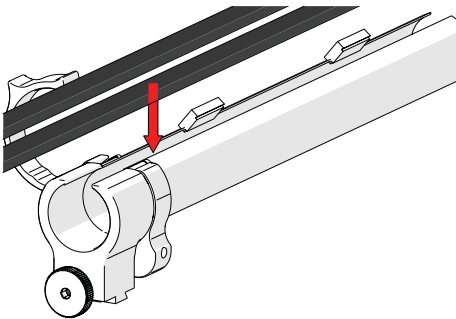


Fig. 53 - Insert cables and hoses

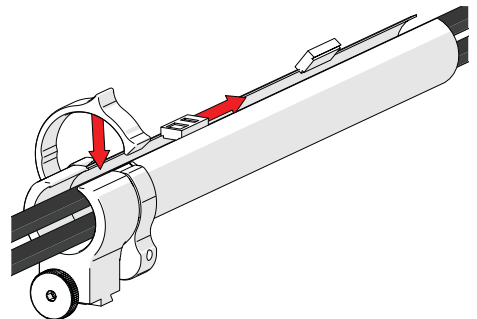


Fig. 54 - Zip up to close

1. Open the zipper tube and cable clip. Begin at the tube's dovetail mount and place the cabling in the tube (*Fig. 53*).

2. Follow the cable placement zipping the tube closed and closing the zipper tube's cable clip (Fig. 54).

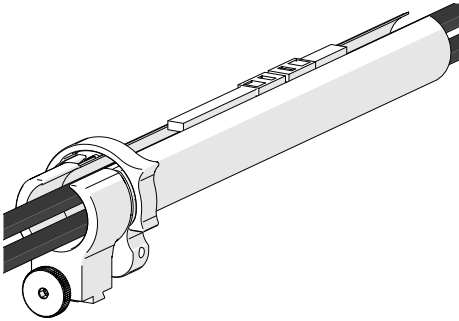


Fig. 55 - Zip opposite end

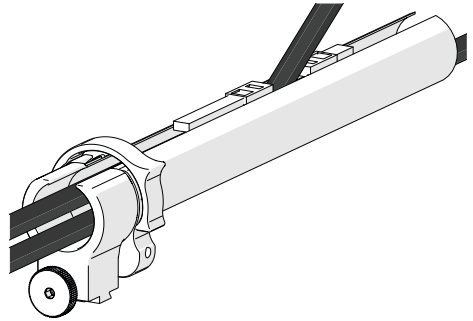


Fig. 56 - Flexibility

3. Once the cable is placed the entire length of tube, bring the zipper from the tubes opposite end, meeting at any point in the middle (Fig. 55).
4. When necessary, the two zippers may be opened to allow any cables to exit the tube anywhere between the ends (Fig. 56).

4.9.3. Clamp Setup

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

1. Loosen the clamp screw using the supplied 3 mm hex driver.
2. Slide the clamp around the tube first and then slide the tube around the outside of the zipper tube dovetail mount (Fig. 57). Align the zipper opening and the zipper tube dovetail mount opening.
3. Slide the clamp over the tube and zipper tube dovetail mount pinching the tube in between (Fig. 58).
4. Tighten the clamp screw (Fig. 59).

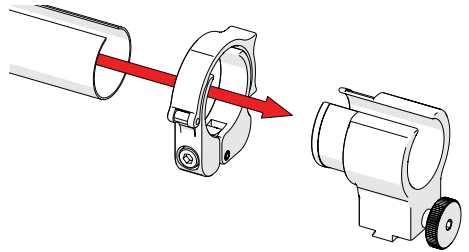


Fig. 57 - Slide tube around mount

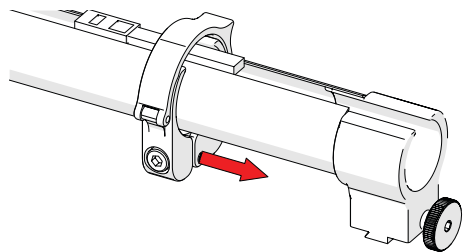


Fig. 58 - Slide clamp onto mount

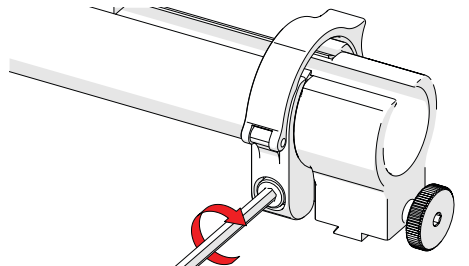


Fig. 59 - Tighten clamp screw

SERVICE AND REPAIR

5.1. Troubleshooting

Problem	Possible Cause	Solution
1. Encoder not functioning.	Instrument not properly setup.	Refer to instrument's documentation regarding proper setup.
	Issue with encoder.	Contact Jireh Industries for repair (<i>see Jireh Industries Ltd. on page i</i>).

5.2. Technical Support

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

5.3. Disposal

WEEE Directive

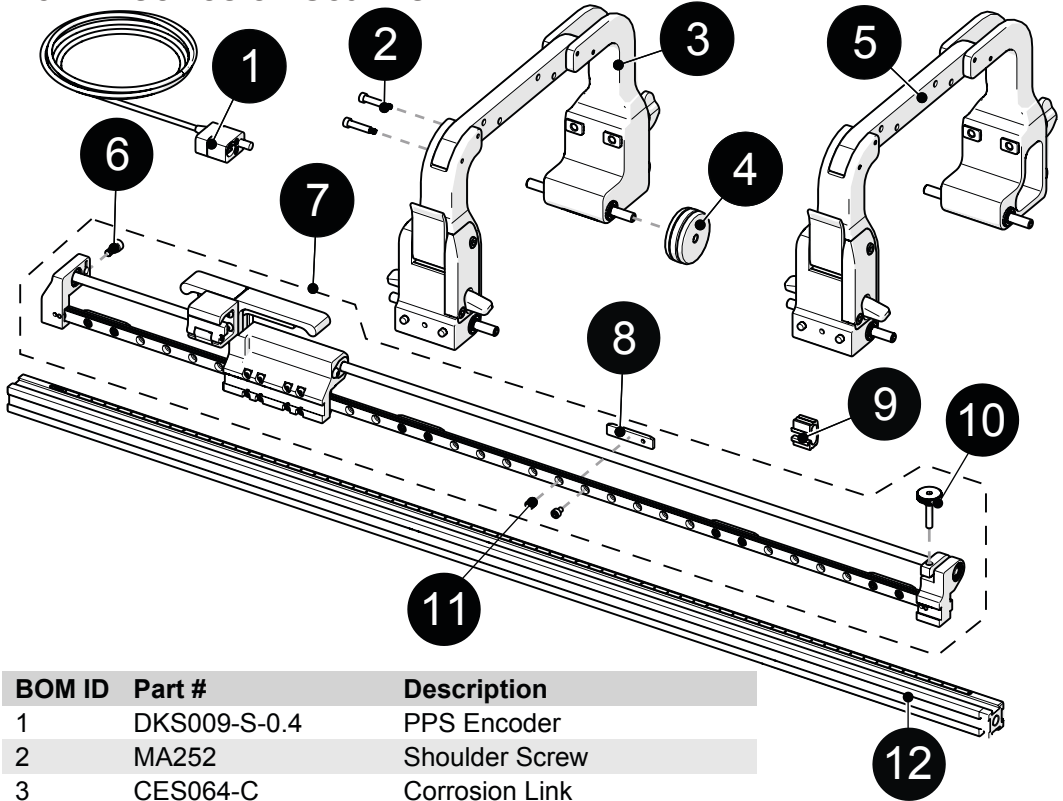
In accordance with European Directive on Waste Electrical and Electronic Equipment (WEEE), this symbol indicated that the product must not be disposed of as unsorted municipal waste, but should be collected separately. Refer to Jireh Industries for return and/or collection systems available in your country.

SPARE PARTS

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

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

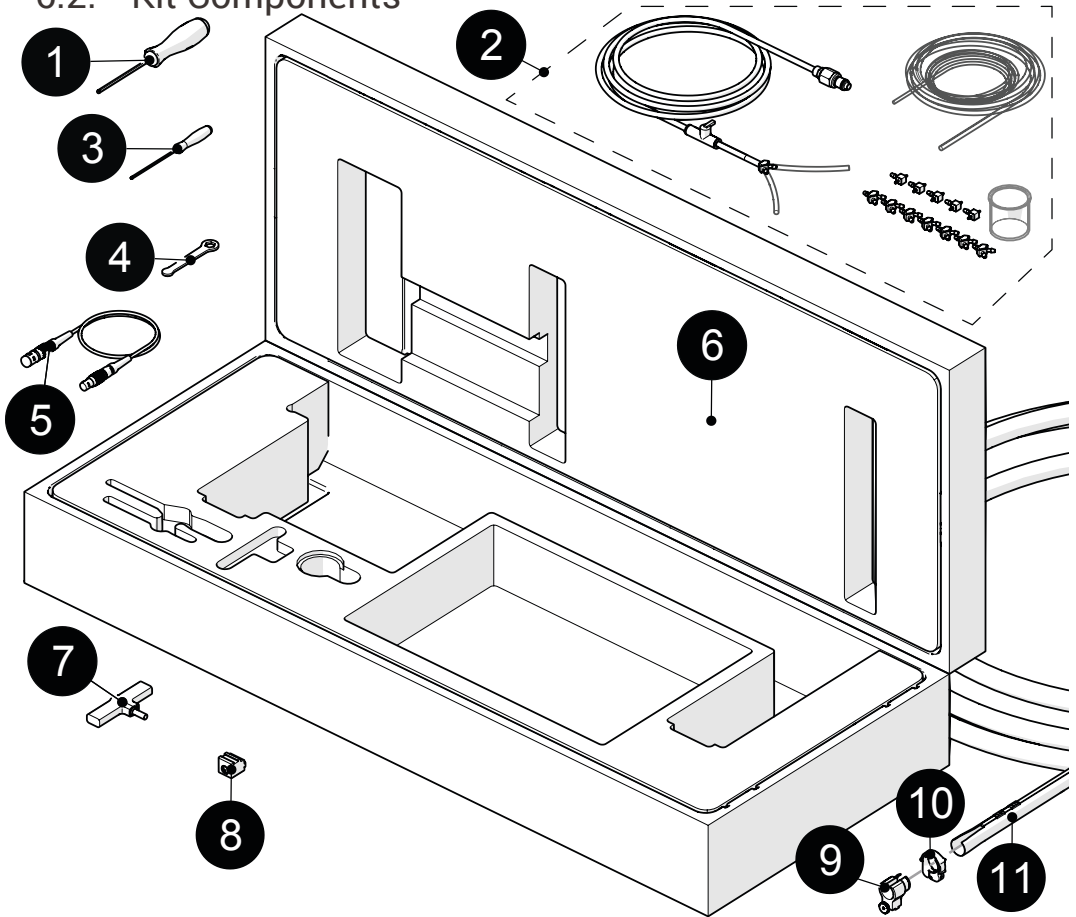
6.1. Corrosion Scanner



BOM ID	Part #	Description
1	DKS009-S-0.4	PPS Encoder
2	MA252	Shoulder Screw
3	CES064-C	Corrosion Link
4	BTS031	Magnetic Wheel
5	CES068-C	Non-Encoded Corrosion Link
6	MD050-010	SHCS, M4x0.7 X 8 mm, SST
7	DKS010-58	Corrosion Slider
8	DK0020	Dovetail Nut
9	BG0091	Cable Clip
10	PH0104	Leadscrew Clamp Knob
11	DK0019	Screw, M3X4.5 SHCS, 3 mm
12	BGS067	Frame Bar with Ruler, 75 cm

Fig. 60 - STIX corrosion scanner parts

6.2. Kit Components



BOM ID	Part #	Description
1	EA414	3 mm Hex Driver
2	CMG007	Irrigation Kit, 2-4 Probe
3	EA476	2 mm Hex Driver
4	EA470	3/8 in Wrench
5	UMA026-X-Y	Encoder Cable (<i>see Encoder Connector Type</i>)
6	BGA017	Rotix Magnetic Corrosion Scanner Case
7	PHS048	Large Yoke
8	BGS068	Dovetail Mount
9	CES067	Zipper Tube Mount
10	CES066	Zipper Tube Clamp
11	<i>See Zipper Tube Length</i>	

Fig. 61 - STIX kit components

6.2.1. Encoder Connector Type

Connector Type	Company/Instrument	Connector Type	Company/Instrument
B	Olympus - OmniScan MX / Zetec - ZIRCON, TOPAZ	G	Sonotron - Isonic
C	Olympus - Focus LT / Zetec Z-Scan	M	GE - USM Vision
D	Olympus - OmniScan MX2, OmniScan SX	U	Sonatest - VEO, PRISMA
F	TD - Focus Scan, Handy Scan, Pocket Scan	V	Pragma PAUT 16/128, PragmaLite / Pragma UT400

Fig. 62 - Encoder connector type

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

6.2.2. Zipper Tube Length

Part #	Length
CX0141	4.5 m (14.7 ft)
CX0145	9.5 m (31.1 ft)

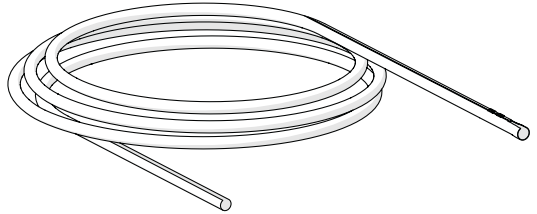
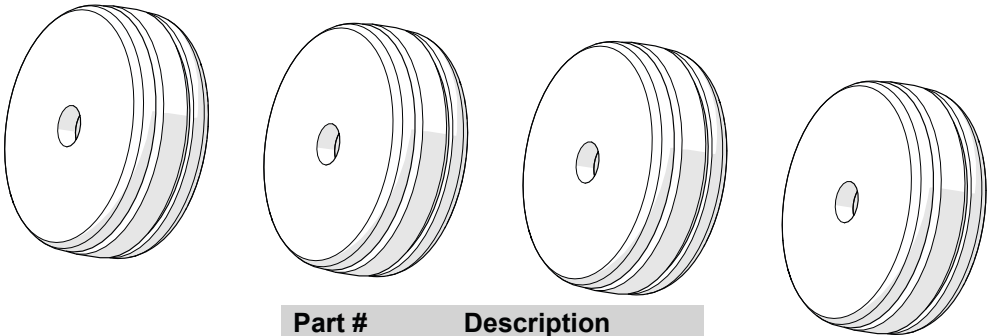


Fig. 63 - Zipper tube length

6.3. Accessories

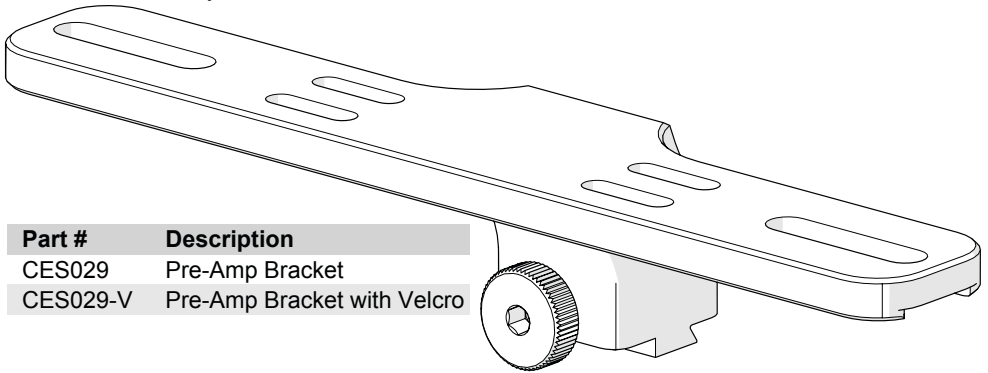
6.3.1. Magnetic Wheel Kit



Part #	Description
BTG014	Magnetic Wheel Kit

Fig. 64 - Magnetic wheel kit

6.3.2. Pre-Amp Bracket



Part #	Description
CES029	Pre-Amp Bracket
CES029-V	Pre-Amp Bracket with Velcro

Fig. 65 - Pre-amp bracket

6.3.3. HydroFORM™ Cart

BOM ID	Part #	Description
1	CA119	Urethane Molded Wheel Bearing

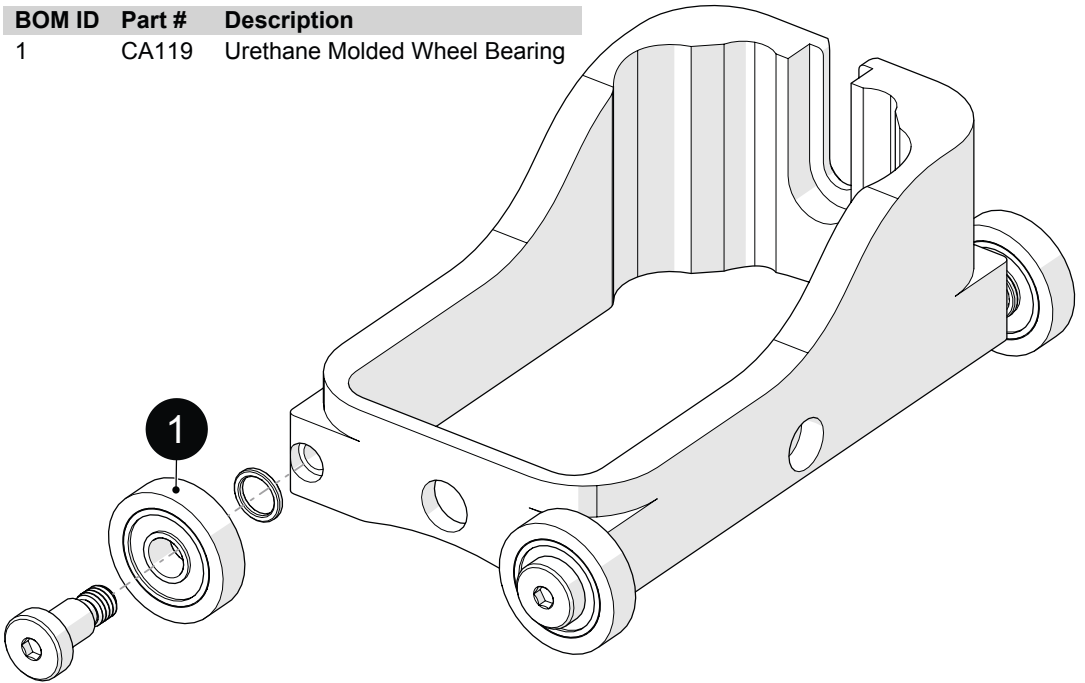
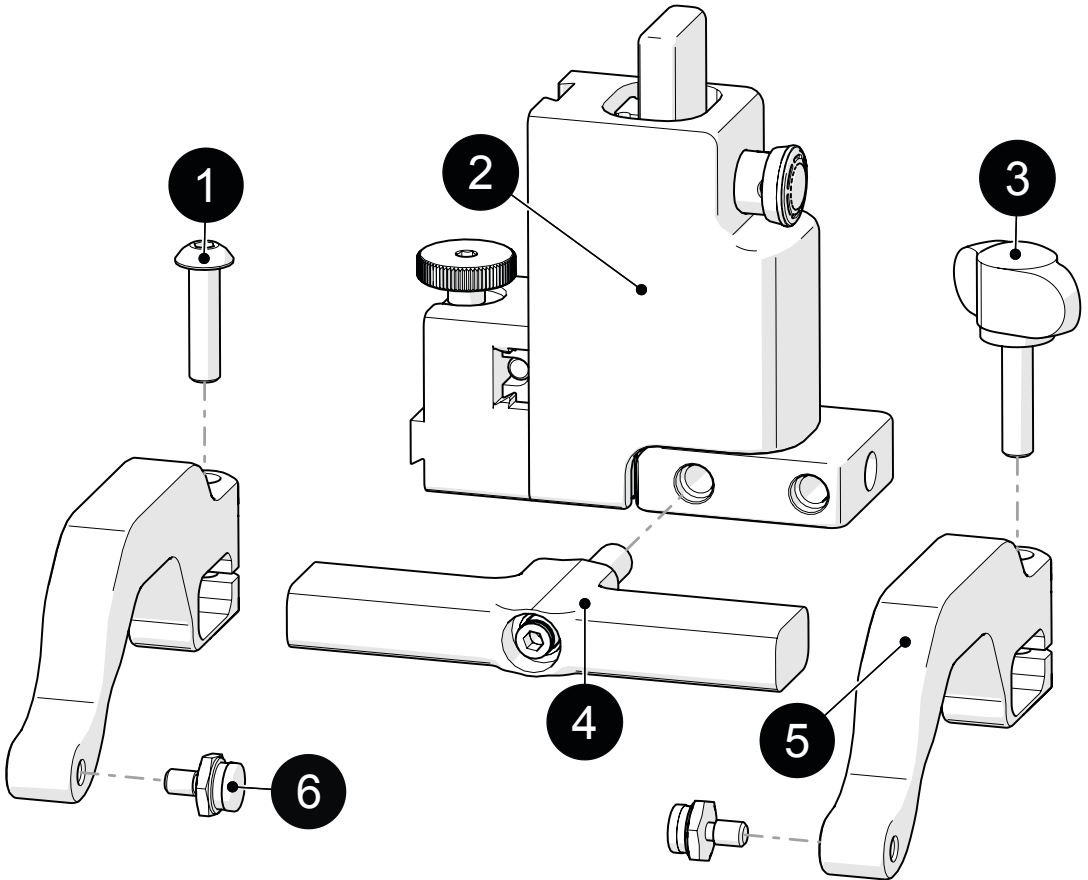


Fig. 66 - HydroFORM™ wheel replacement

6.4. Heavy Duty Vertical Probe Holder



BOM ID	Part #	Description
1	MD074-020	Arm Clamp Screw, BHCS, Metric SST
2	PHS049	Heavy Duty Probe Holder Subassembly
3	EA154	Probe Holder Arm Adjustment Knob
4	See Yoke Style	
5	PH0165	Probe Holder Arm
6	PH0011-X	Pivot Button Style (see Pivot Button Style)

Fig. 67 - Heavy duty vertical probe holder

6.5. Probe Holder Components

6.5.1. Heavy Duty Yoke Style

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

Fig. 68 - Probe holder yoke selection

6.5.2. Pivot Button Style









	Pivot Hole Size	Wedge Type			Pivot Hole Size	Wedge Type	
01	8.0 mm (0.32 in)	Olympus PA		02	5.0 mm (0.20 in)	Olympus TOFD	
03	2.7 mm (0.11 in)	Sonatest DAAH PA		04	9.5 mm (0.38 in)	-	
06	3.0 mm (0.12 in)	-		07	2.3 mm (0.09 in)	-	
08	Conical Head	-		09	5 mm (0.20 in) Internal	Zetec PA/TOFD	

Fig. 69 - Probe holder button selection

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

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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SCANNING TECHNOLOGY FOR NDT

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