STIX

BG0104 Rev 03.4
Magnetic Long Seam Scanner

JIREH

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 also "Disposal" on page 46).

TABLE OF CONTENTS

IDENTIFICATION

1.1. Product Brand

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

1.1.1. 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** long seam scanner is a longitudinal and circumferential manual magnetic scanner.

2.1.1. Operating Limits

	Minimum	Maximum
Circumferential pipe range	25.4 cm *(10 in)*	Flat
Longitudinal pipe range	15.24 cm *(6 in)*	Flat

2.1.2. 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)*.

2.2. Dimensions and Weight

Encoder cable length (Standard kit)	5 m *(16.4 ft)*
Frame weight	1.9 kg *(4.25 lb)*

2.3. Environmental Sealing

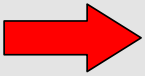
Watertight *(submersible) (contact Jireh Industries Ltd. on page 1 for details)*

2.4. Performance Specifications

Scan encoder resolution	9.05 counts/mm *(230.0 counts/inch)*

DEFINITIONS

3.1. Definitions of Symbols

	Denotes movement. Instructing user to carry out an action in a specified direction.
	Indicates alignment axis.
	Indicates user 'look here' or 'see this part'.

3.2. Definition of Terms

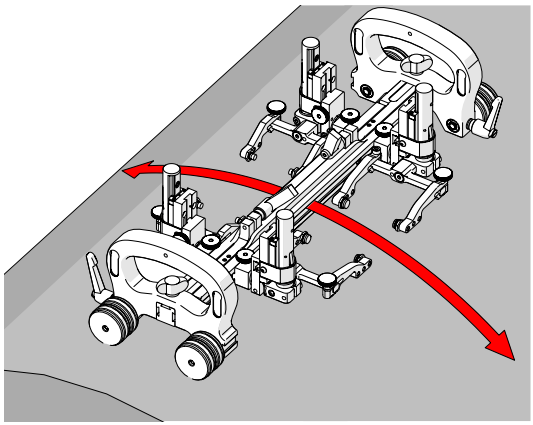


Fig. 1 - Circumferential scanning

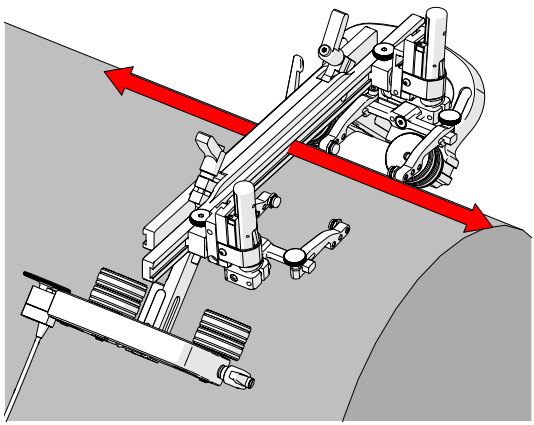


Fig. 2 - Longitudinal scanning

Circumferential	Direction of scan travel is around the circumference of the pipe/tube *(Fig. 1)*.
Longitudinal	Direction of scan travel is lengthwise of the pipe/tube *(Fig. 2)*.

SYSTEM COMPONENTS

4.1. Component Identification

The **STIX** system may utilize the following components:

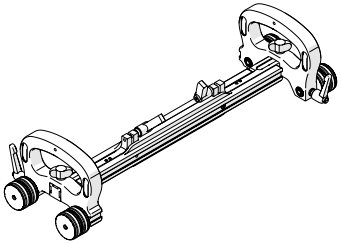


Fig. 3 - Long seam scanner
BGA018

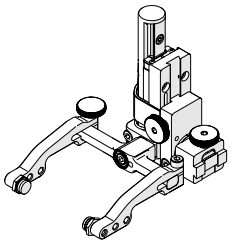


Fig. 4 - Vertical probe jolder
PHA015-

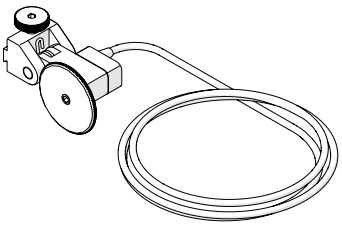


Fig. 5 - Spring-loaded encoder
BGS053-

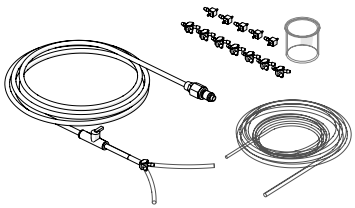


Fig. 6 - Irrigation kit
CMG007

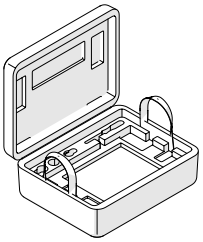


Fig. 7 - STIX case
BGA005

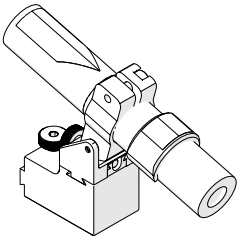


Fig. 8 - Battery powered optical guide
CXS080

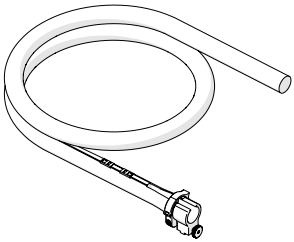


Fig. 9 - Cable management, dovetail mount
CES044-

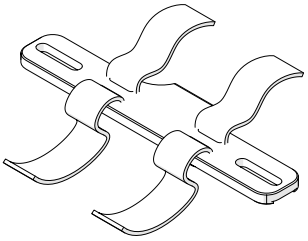


Fig. 10 - Preamp bracket
CES029-

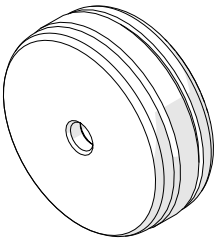


Fig. 11 - Magnetic wheel
BTS031

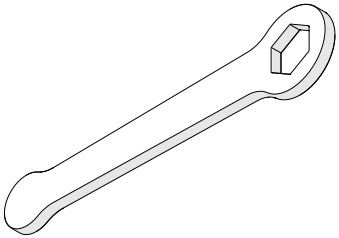


Fig. 12 - 3/8 in wrench
EA470

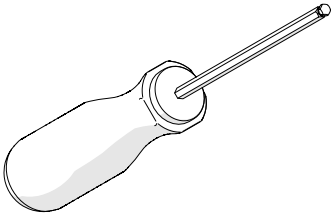


Fig. 13 - 3 mm hex driver
EA414

4.2. Tools

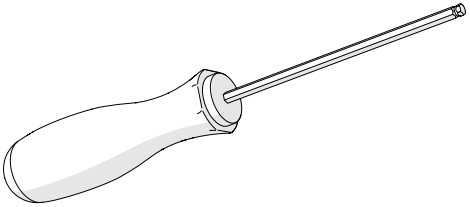


Fig. 14 - 3 mm hex driver

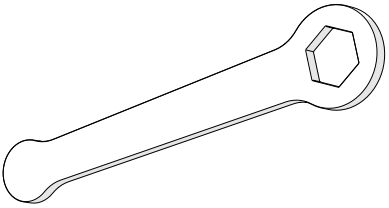


Fig. 15 - 3/8 in wrench

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.

4.3. Dual Pivot Frame Bar

The dual pivot frame bar provides mounting positions for probe holders and ratchet levers, which lock the dual pivot frame bar in place.

To pivot the frame bar, follow these steps:

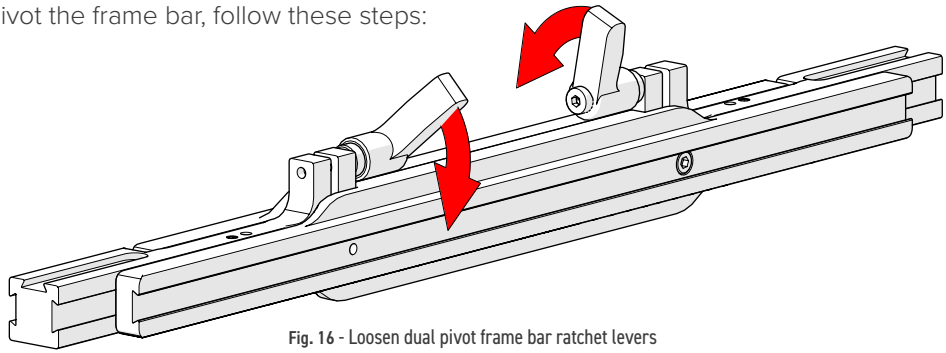


Fig. 16 - Loosen dual pivot frame bar ratchet levers

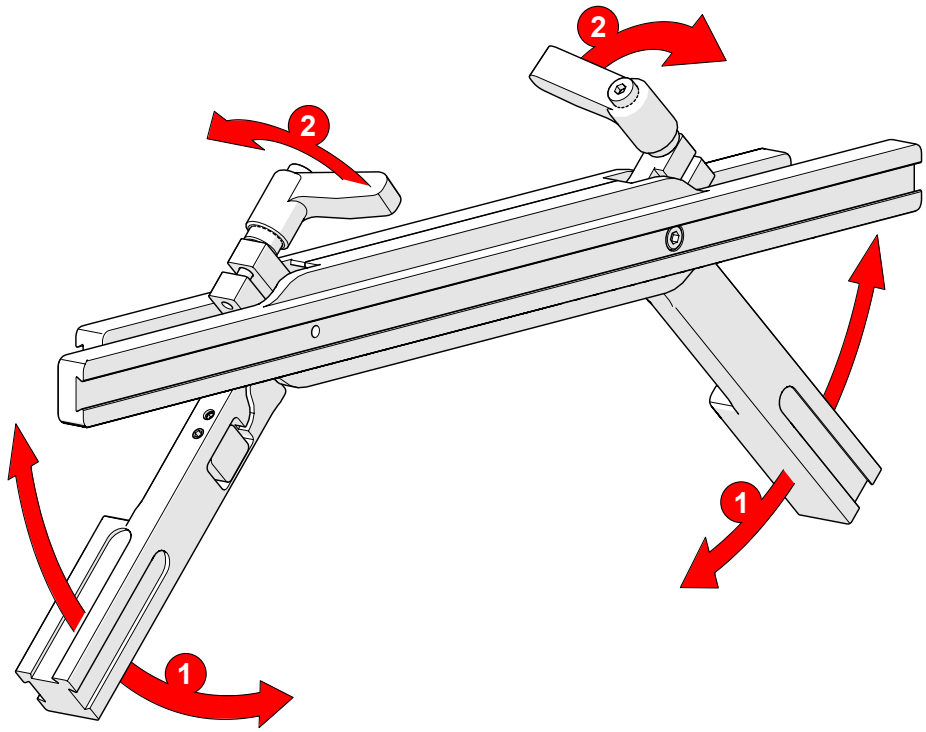


Fig. 17 - Pivot the dual frame bars to required position, lock ratchet levers

1. Rotate the dual pivot frame bar's ratchet levers *(Fig. 16)* to allow movement of the dual pivot frame *(see "Ratchet Lever" on page 12)*.
2. The dual pivot frame will pivot both sides of the frame bar simultaneously *(Fig. 17-1)*. Position the dual pivot frame at the angle required.

3. Tighten the dual pivot frame bar's ratchet levers to lock the frame bars at the required angle *(Fig. 17-2)*.

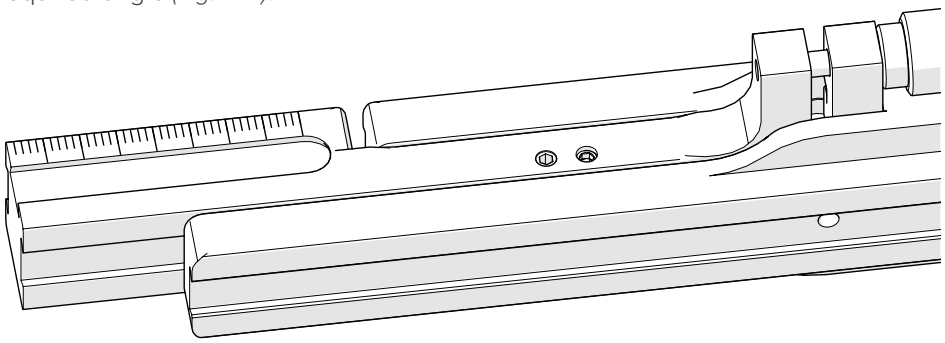


Fig. 18 - Measurement increments located at the ends of dual pivot frame bar

4. Measurement increments *(Fig. 18)* on the frame bar are used to align the wheel block with handles *(see "Wheel Block with Handle Positioning" on page 9)*.

4.4. Wheel Block with Handle

The wheel block with handle offers stability, braking and mounting points for cable management and the spring-loaded encoder.

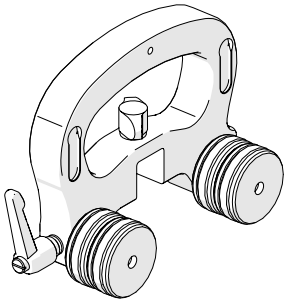


Fig. 19 - Wheel block with handle

4.4.1. Wheel Block with Handle Orientation

Orientation and positioning of the wheel blocks with handles on the dual pivot frame bar are determined by the diameter of the scan surface.

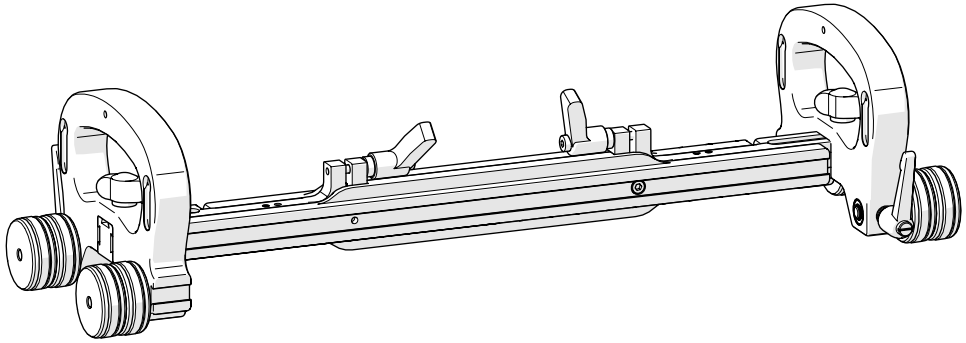


Fig. 20 - Wheel block with handle, wheels facing outward, handle flush with frame bar

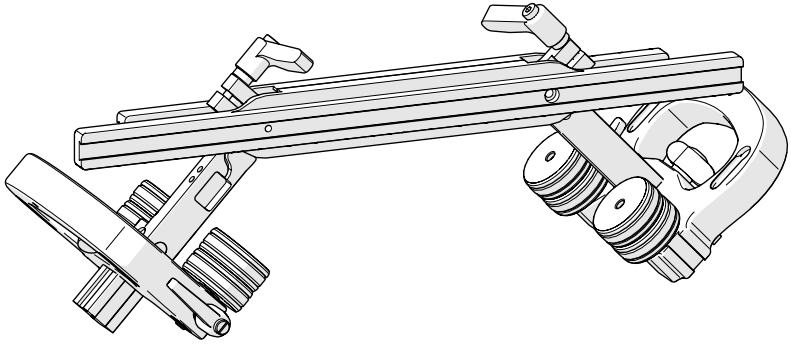


Fig. 21 - Wheel block with handle, wheels facing inward, positioned to innermost measurement increment

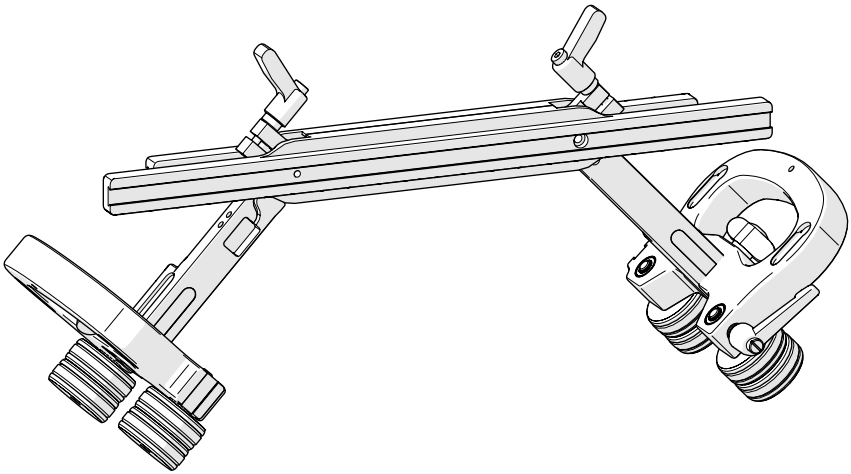


Fig. 22 - Wheel block with handle, wheels facing outward, handle flush with frame bar

The following indicates the **STIX** configuration for various scan diameters.

Scan Type	Diameter	Wheel & Handle Position
Circumferential	25.4 cm - flat *(10 in - flat)*	Wheels face outward, Handle flush with frame bar end *(Fig. 20)* *(see also "Wheel Block with Handle Mounting" on page 9)*
Longitudinal	15.24 - 30.48 cm *(6 -12 in)*	Wheels inward, *(Fig. 21)* handle lined up with innermost measurement increment *(see also "Wheel Block with Handle Positioning" on page 9)*
Longitudinal	30.48 cm - flat *(12 in - flat)*	Wheels outward, handle flush with frame bar end *(Fig. 22)*

4.4.2. Wheel Block with Handle Mounting

To mount a wheel block with handle, follow these steps:

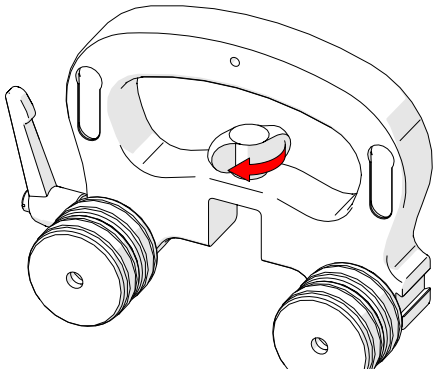


Fig. 23 - Loosen wing knob

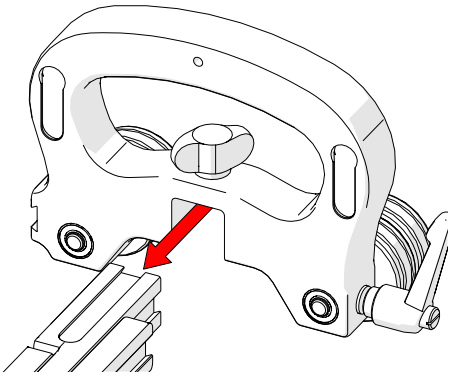


Fig. 24 - Attach to a frame bar

1. Loosen the wheel block with handle wing knob *(Fig. 23)*
2. Slide the wheel block with handle onto the dovetail of the dual pivot frame bar *(Fig. 24)*.
3. Tighten the wheel block with handle wing knob *(Fig. 25)*.

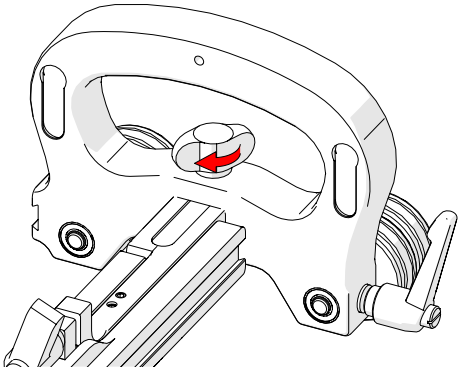


Fig. 25 - Tighten wing knob

4.4.3. Wheel Block with Handle Positioning

Adjusting the wheel block with handle's position on the dual pivot frame bar will be necessary on smaller diameter circumferential scan surfaces.

> ***TIP:*** *Positioning of the wheel block with handle is only required when the longitudinal scan diameter is less than 30.5 cm (12 in).*

1. Release the dual pivot frame bar's ratchet levers *(Fig. 16)*.

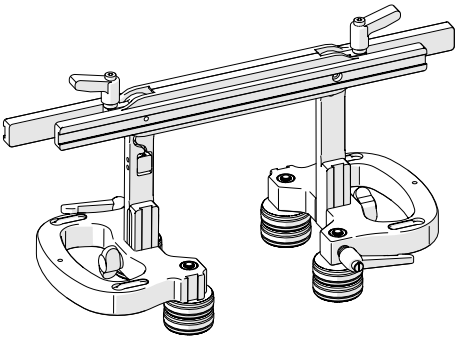


Fig. 26 - Simple wheel block positioning

2. Allow the sides of the frame bar to lower 90° *(Fig. 26)*.
3. Loosen the wheel block with handle wing knob *(Fig. 23)*.
4. Position the wheel block with handle to the appropriate location *(Fig. 27)* on the dual pivot frame bar.
5. Repeat the previous steps with the opposite wheel block with handle. Be sure the positioning of each wheel block with handle matches.

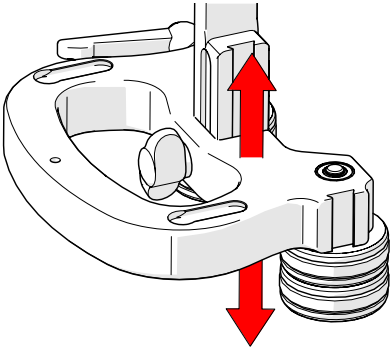


Fig. 27 - Simple wheel block positioning

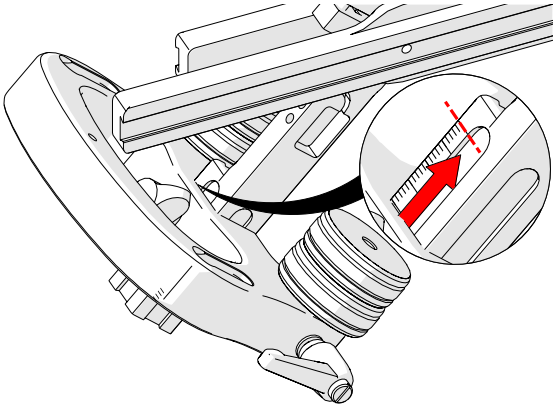


Fig. 28 - Wheel block set to innermost increment

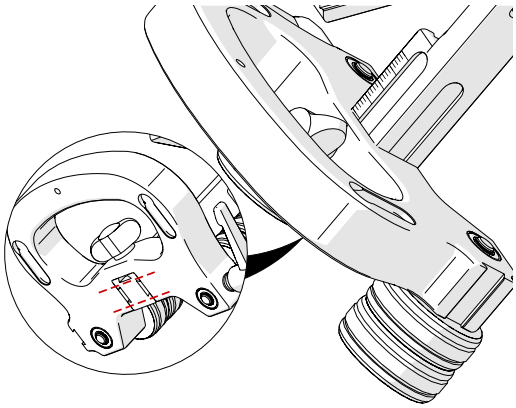


Fig. 29 - Wheel block flush we end of frame bar

4.4.4. Wheel Block with Handle Cable Management

Four mounting points for cable management are located on the wheel block with handle *(see "Cable Management" on page 20)*.

4.4.5. Wheel Installation

WARNING! MAGNETIC MATERIAL. The magnetic wheels 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.

1. Ensure the brake of the wheel block with handle is **NOT** activated *(see "Brakes" on page 12)*.
2. Locate and position the threaded side of the magnetic wheel away from the scanner.
3. Screw the magnetic wheel along the entire length of the axle.
4. Tightly grip the magnetic wheel by hand and, using the supplied 3 mm hex driver *(Fig. 14)*, tighten the magnetic wheel to the axle *(Fig. 30)*.
5. Perform the preceding step on the remaining three wheel mounts of the scanner.
6. Locate the threaded side of the magnetic wheel and orient the threaded side towards the scanner. Overcome the magnetic resistance to screw the additional wheel to the axle of the wheel block with handle *(Fig. 31)*.

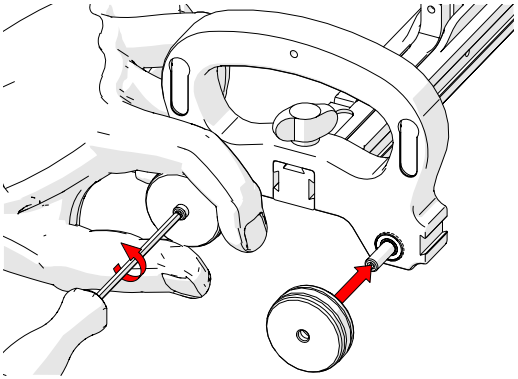


Fig. 30 - Wheel installation

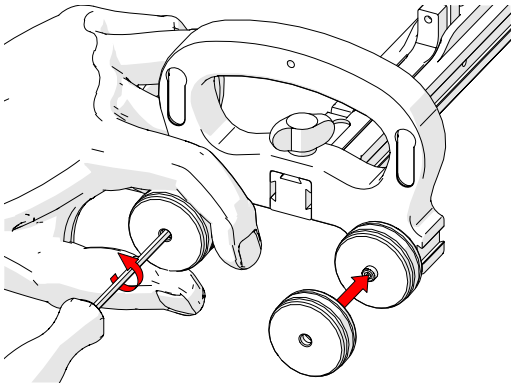


Fig. 31 - Additional wheel installation

7. Tightly grip the magnetic wheel by hand, and using the 3 mm hex driver, tighten the magnetic wheel to the axle. Repeat these steps to install magnetic wheels to the remaining three wheel mounts.

TIP: *To remove magnetic wheels, reverse these preceding steps.*

NOTE: *Magnetic wheels may lose their magnetic properties if heated above 175° F (80° C).*

4.4.6. Brakes

The brakes for the system are located on each wheel block with handle.

Rotate the lever clockwise to engage the brakes. Rotate counterclockwise to release the brakes.

Adjustment of the ratchet lever is possible *(see "Ratchet Lever" on page 12)*.

> ***TIP:*** *When the brake is engaged, and the scanner is moved, this may loosen the wheels from the axle. Grip the magnetic wheel tightly and re-tighten to the axle with the 3 mm hex driver.*

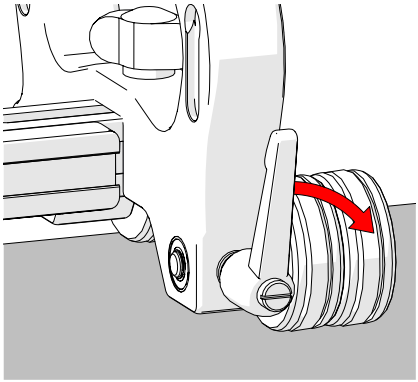


Fig. 32 - Brakes

4.4.7. Ratchet Lever

The ratchet levers lock the STIX system's brakes and dual pivot frame bar. Occasionally, movement of the lever's locking position is required. The lever placement can be adjusted by following these steps:

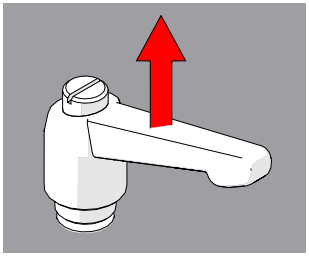


Fig. 33 - Pull ratchet handle

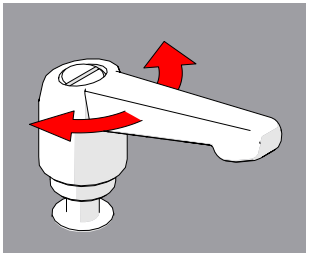


Fig. 34 - Rotate handle

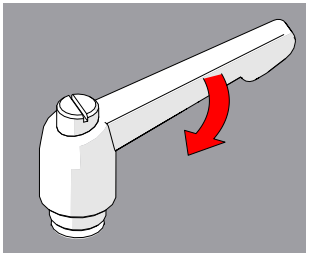


Fig. 35 - Tighten handle

1. Pull the ratchet lever away from the base to which it is connected *(Fig. 33)*.
2. Continue to pull while rotating the lever in the appropriate direction *(Fig. 34)*.
3. Release the lever and utilize the new tightening position *(Fig. 35)*.

4.5. Spring-Loaded Encoder

The spring-loaded encoder maintains contact with the scan surface.

4.5.1. Longitudinal Setup

To attach the encoder to the wheel block with handle for long seam scanning, follow these steps:

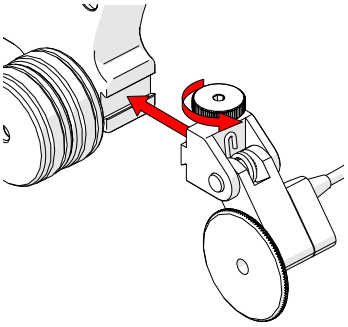


Fig. 36 - Attach to wheel block

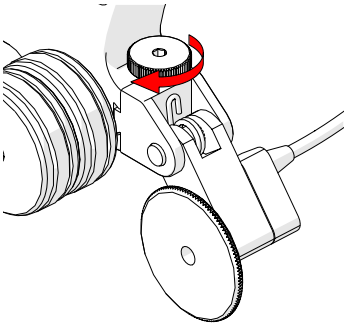


Fig. 37 - Tighten knob

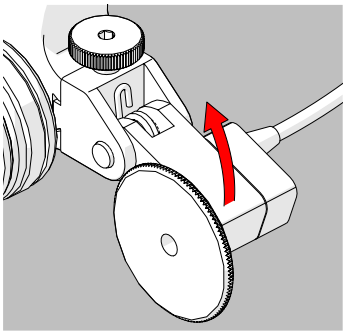


Fig. 38 - Place on scan surface

1. Loosen the dovetail jaw and mount it to the wheel block with handle *(Fig. 36)*.
2. Tighten the encoder's knob *(Fig. 37)*.
3. Spring tension maintains constant encoder contact with the surface *(Fig. 38)*.

4.5.2. Circumferential Setup

To attach the encoder to the frame bar for circumferential scanning, follow these steps:

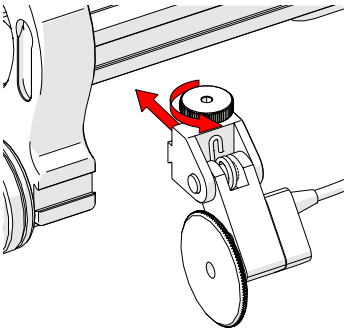


Fig. 39 - Attach to frame bar

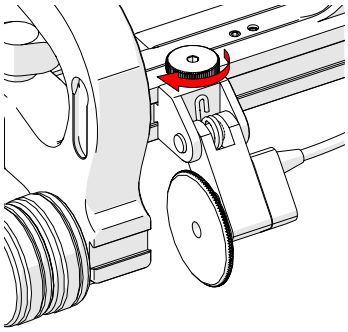


Fig. 40 - Tighten knob

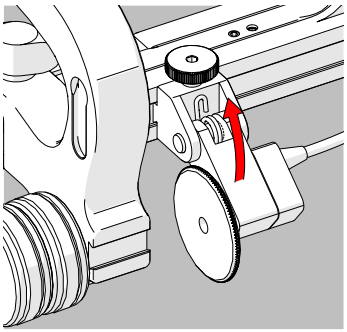


Fig. 41 - Place on scan surface

1. Loosen the encoder's dovetail jaw and mount it to the dual pivot frame bar *(Fig. 39)*.
2. Tighten the encoder's knob *(Fig. 40)*.
3. Spring tension maintains constant encoder contact with the surface *(Fig. 41)*.

4.6. Vertical Probe Holder

A	Latch
B	Probe Holder Adjustment Knob
C	Vertical Adjustment Knob
D	Pivot Buttons
E	Probe Holder Arms
F	Yoke
G	Probe Holder Arm Adjustment Knob
H	Transverse Adjustment Screw
I	Frame Bar

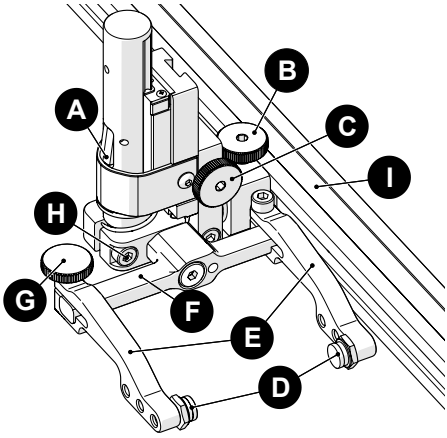


Fig. 42 - Vertical probe holder

4.6.1. Probe Holder Setup

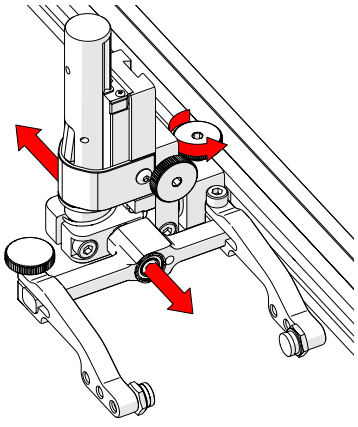


Fig. 43 - Adjust on frame bar

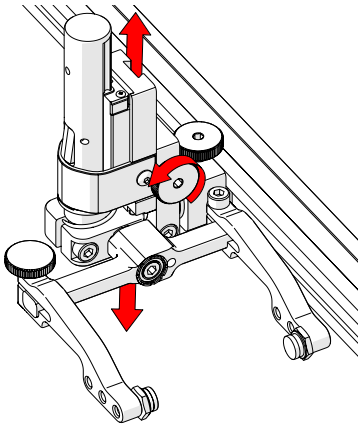


Fig. 44 - Vertical adjustment

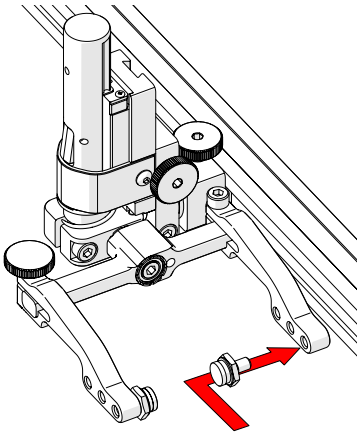


Fig. 45 - Place buttons

1. The probe holder adjustment knob allows the probe holder to be attached to a frame bar, as well as horizontal positioning on a frame bar *(Fig. 43)*.
2. The vertical adjustment knob allows the vertical probe holder height adjustment *(Fig. 44)*.
3. Position the pivot buttons where necessary. When a narrow scanning footprint is required, use the pivot button holes closest to the yoke *(Fig. 45)*.

> ***TIP:*** *Probe pivoting may be impeded when closer to the yoke.*

4. To mount a UT wedge in the probe holder, follow these steps:

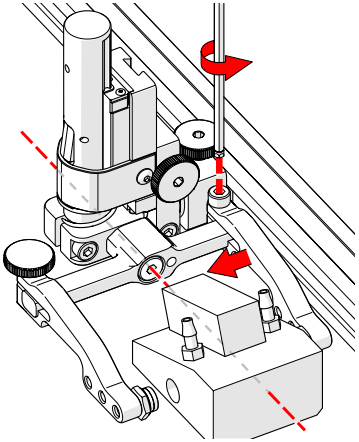


Fig. 46 - Adjust inner arm

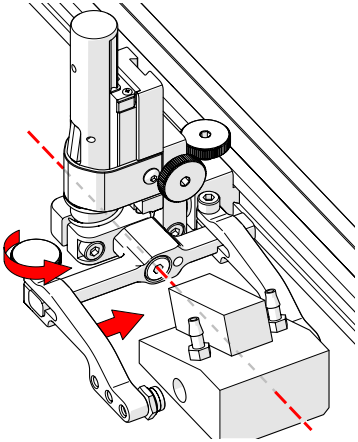


Fig. 47 - Adjust outer arm

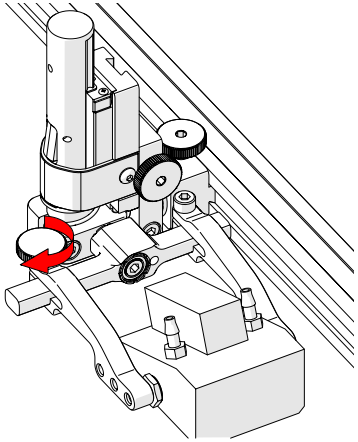


Fig. 48 - Tighten arm knob

5. Position the wedge on the inner probe holder arm *(Fig. 46)*.

> ***TIP:*** *The probe holder yoke can accommodate many different probe and wedge sizes of varying widths. It is best to centre the wedge with the yoke's pivot axis. This can reduce wedge 'rocking' when scanning. Position the inner probe holder arm accordingly (Fig. 46) using the supplied 3 mm hex driver (Fig. 14).*

6. Loosen the probe holder arm adjustment knob *(Fig. 47)* and slide the probe holder arm along the yoke pinching the wedge in place.

7. Tighten the probe holder arm adjustment knob *(Fig. 48)*.

4.6.2. Probe Holder Vertical Adjustment

To adjust the probe holder vertically, follow these steps:

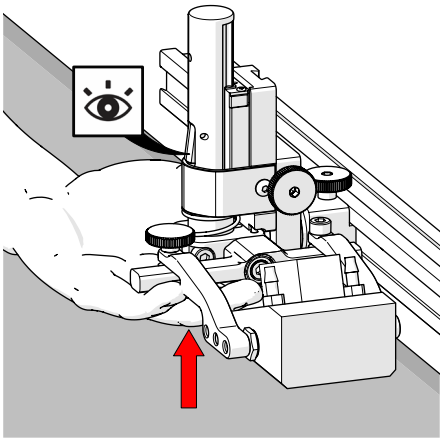


Fig. 49 - Latch probe holder

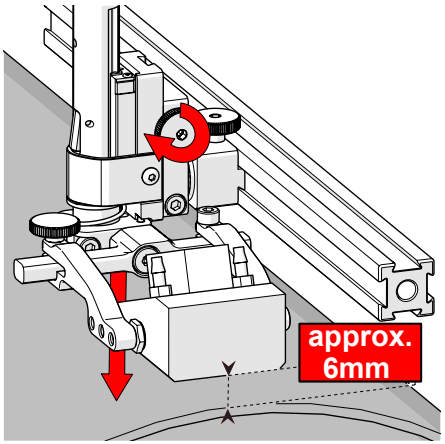


Fig. 50 - Lower toward scan surface

1. Ensure the probe holder is in the latched upper position. Lift the probe holder until the latch is fully exposed and snaps out to lock *(Fig. 49)*.
2. Loosen the vertical adjustment knob and slide the probe holder down until the wedge is approximately 6 mm *(¼ in)* above inspection surface.
3. Tighten the vertical adjustment knob *(Fig. 50)*.

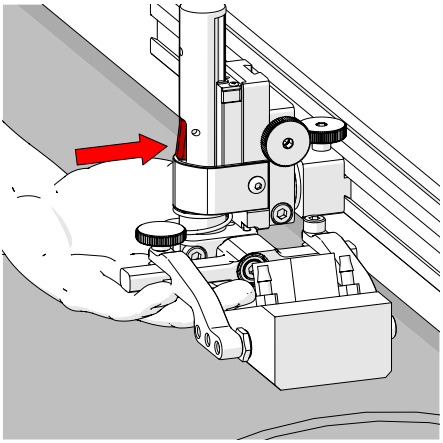


Fig. 51 - Press latch button

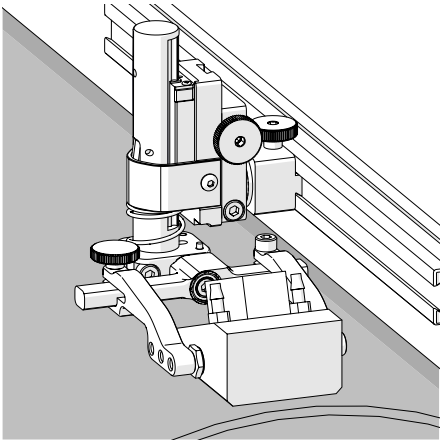


Fig. 52 - Lower toward scan surface

4. Lift the yoke slightly and press the latch button *(Fig. 51)*, then slowly lower towards scanning surface to apply spring pressure to the wedge *(Fig. 52)*.

> ***TIP:*** *If less spring force is desired, refer to step 2 and place the wedge approximately 20 mm (¾ in) above the inspection surface.*

4.6.3. Probe Holder Transverse Adjustment

To adjust the probe holder's transverse angle, follow these steps:

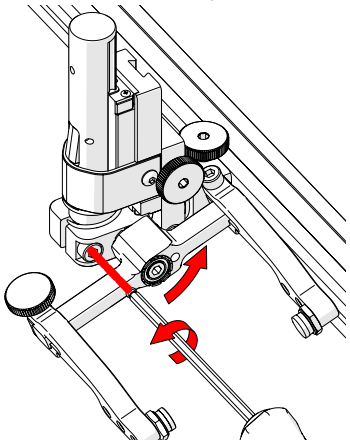


Fig. 53 - Loosen 3 mm screw

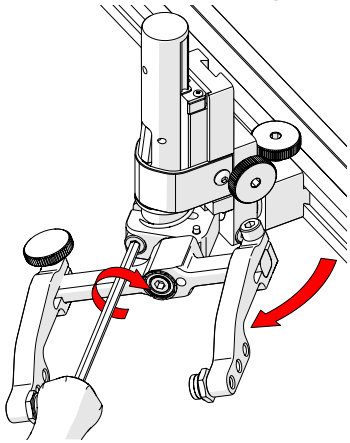


Fig. 54 - Rotate and tighten

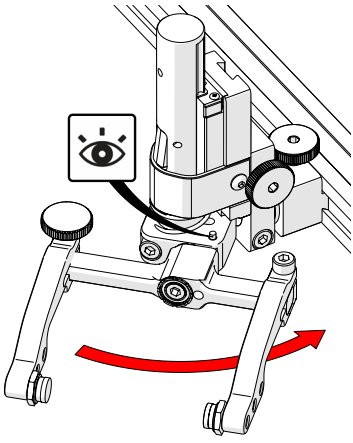


Fig. 55 - Stop post locates 90°

1. Ensure the probe holder is in latched, upper position *(Fig. 49)*.
2. Using the supplied 3 mm hex driver loosen the transverse adjustment screw *(Fig. 53)* and rotate the yoke about the vertical shaft achieving the desired angle.
3. Tighten the transverse adjustment screw *(Fig. 54)*.

To return the transverse adjustment to neutral *(90°)*. The probe holder must be in the latched, upper position *(Fig. 49)*. Rotate the yoke until the stop post contacts the base of the probe holder *(Fig. 55)*. Then tighten the transverse adjustment screw.

4.6.4. Probe Holder Longitudinal Adjustment

To adjust the probe holder's vertical angle for longitudinal scanning, follow these steps:

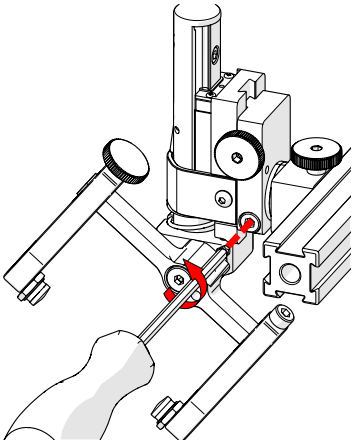


Fig. 56 - Loosen 3 mm screw

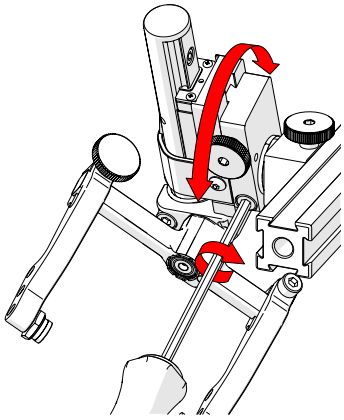


Fig. 57 - Rotate to position

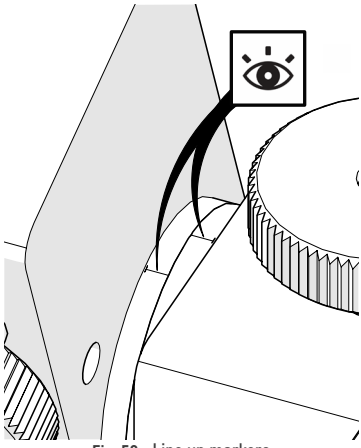


Fig. 58 - Line up markers

1. Ensure the probe holder is in latched, upper position *(Fig. 49)*.
2. Using the supplied 3 mm hex driver *(Fig. 14)*, loosen the longitudinal adjustment screw *(Fig. 56)*.
3. Rotate the main body of the probe holder until it is at the desired angle *(Fig. 57)*.
4. Tighten the longitudinal adjustment screw *(Fig. 57)*.

To return the longitudinal adjustment to neutral *(90°)*. Line up the longitudinal adjustment indicator markers *(Fig. 58)*.

4.6.5. Probe Holder Left/Right Conversion

To reverse the probe holder, follow these steps:

> ***NOTE:*** *To perform this operation, the 1.5 mm hex wrench (Fig. 15) is required.*

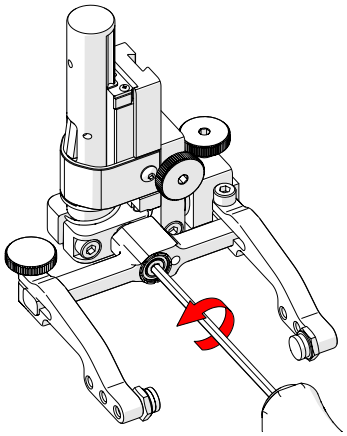


Fig. 59 - Unscrew yoke pivot screw

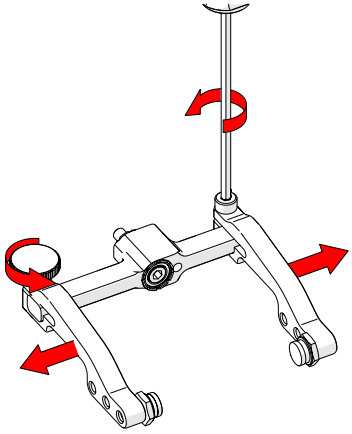


Fig. 60 - Remove probe holder arms

1. Ensure the probe holder is in latched, upper position *(Fig. 49)*.
2. Using the supplied 3 mm hex driver *(Fig. 14)*, unscrew the yoke pivot screw and remove the yoke *(Fig. 59)*.
3. Loosen the probe holder arm adjustment knob and the arm clamp screw. Slide the probe holder arms off the yoke *(Fig. 60)*.

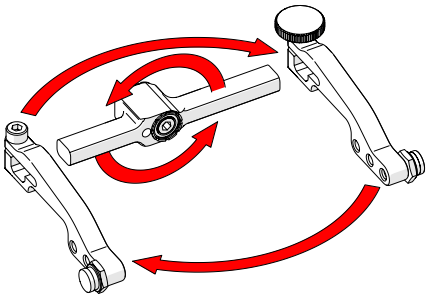


Fig. 61 - Flip yoke and reverse arms

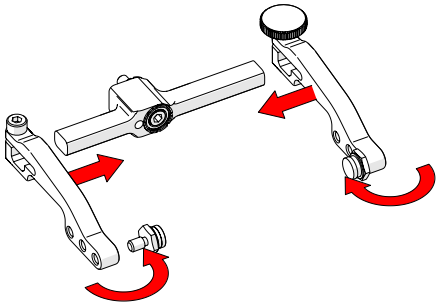


Fig. 62 - Attach arms & move buttons

4. Flip the yoke 180° and reverse the probe holder arms *(Fig. 61)*.
5. Place the pivot buttons on the inside of the probe holder arms *(Fig. 62)* using a 3/8 in wrench *(Fig. 15)*.

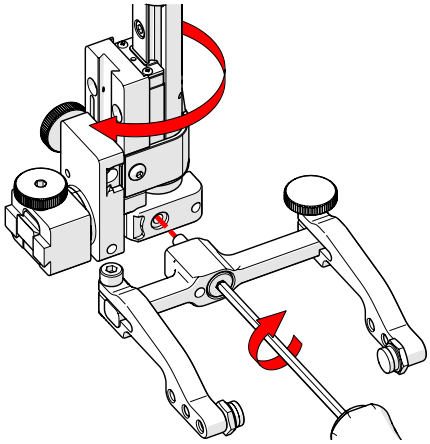


Fig. 63 - Screw yoke to opposite side

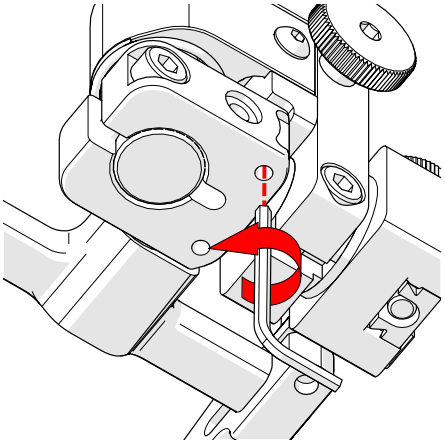


Fig. 64 - Lower 90° stop post

6. Mount the yoke to the opposite side of the base using the supplied 3 mm hex driver *(Fig. 63)*.

> ***TIP:*** *Keep the yoke level with the base to ensure no conflicts with the plunger/set screw attached to the yoke.*

7. Locate the recessed M3 screw on the bottom of the probe holder. Unscrew the stop post using a 1.5 mm hex wrench until it has cleared all obstructions. Do not remove the stop post *(Fig. 64)*.

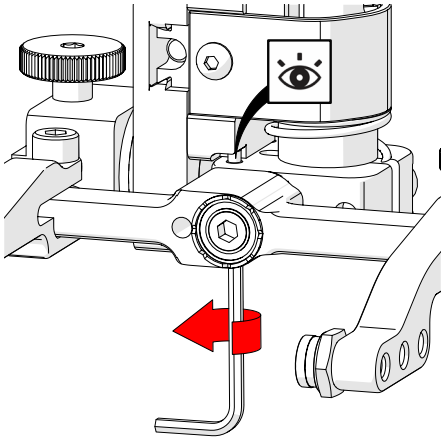


Fig. 65 - Raise opposite 90° stop post

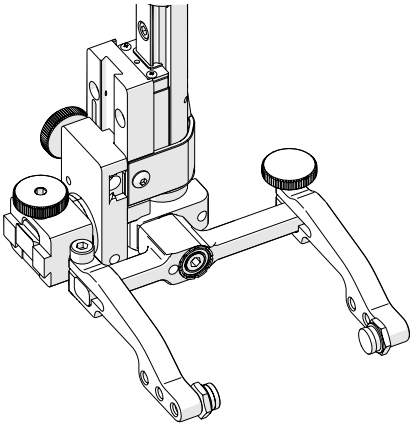


Fig. 66 - Reversed probe holder

8. Raise the stop post on the opposite side until the side of the post contacts the 90° stop point on the probe holder's base *(Fig. 65)*.

4.7. 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. 67)*.

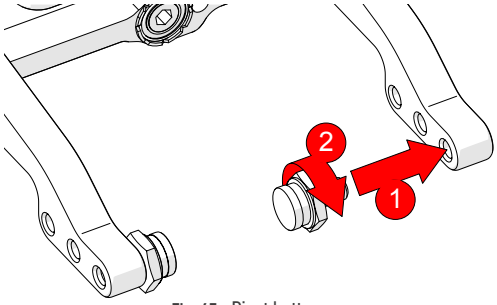


Fig. 67 - Pivot buttons

4.8. Cable Management

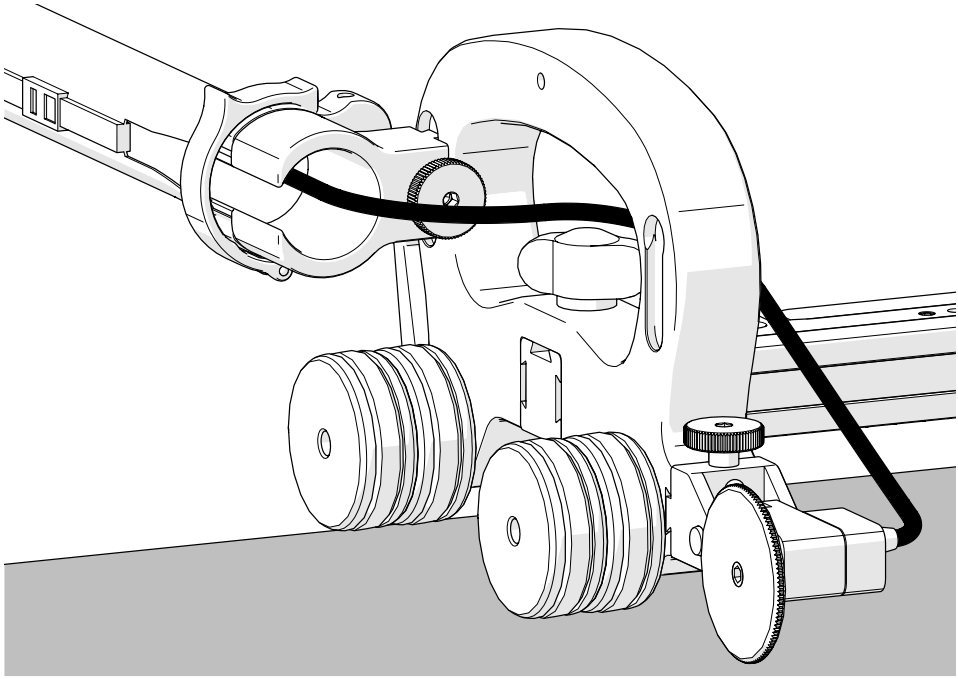


Fig. 68 - Cable management

4.8.1. Cable Management Dovetail Mount

Multiple dovetail mount locations are available on the wheel block handles. To attach the cable management, follow these steps:

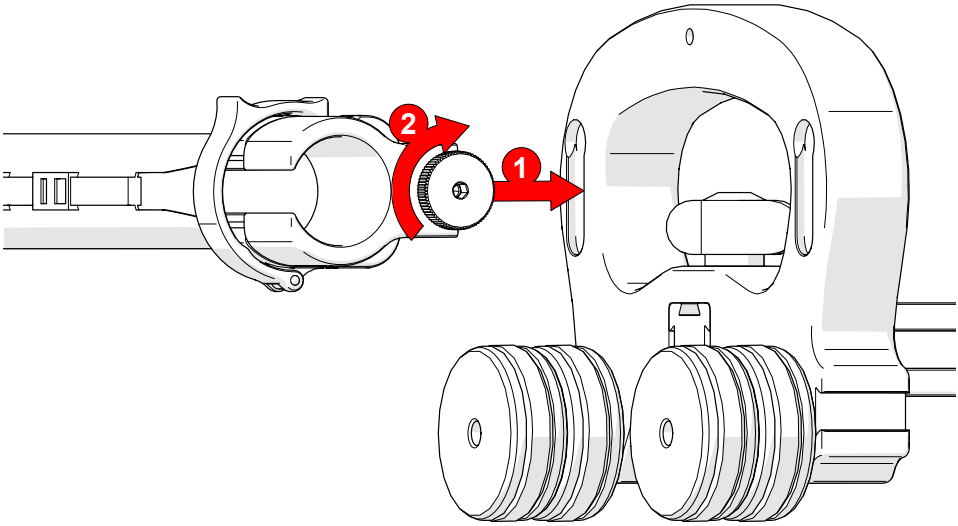


Fig. 69 - Mounting cable management

1. Loosen the knob on the cable management dovetail mount. Attach the mount onto the dovetail of the wheel block with handle *(Fig. 69-1)*.
2. Tighten the cable management knob *(Fig. 69-2)* when the cable management dovetail mount is positioned where required.

4.8.2. 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.

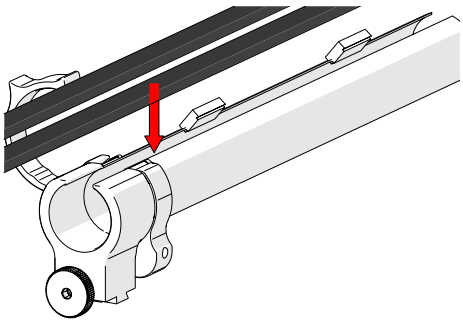


Fig. 70 - Insert cables and hoses

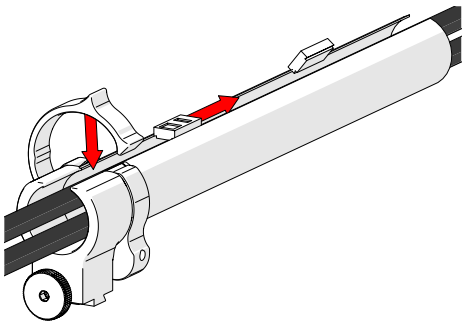


Fig. 71 - Zip up to close

1. Open the cable management tube and cable latch. Begin at the tube's dovetail mount and place the cabling in the tube *(Fig. 70)*.

2. Follow the cable placement, zipping the tube closed and closing the cable management's cable latch *(Fig. 71)*.

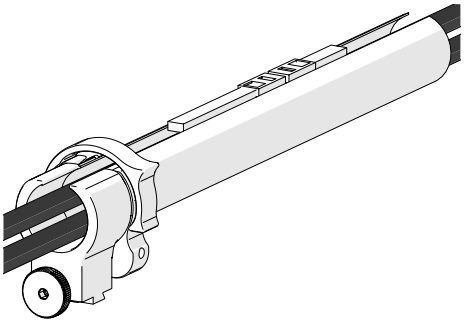


Fig. 72 - Zip opposite end

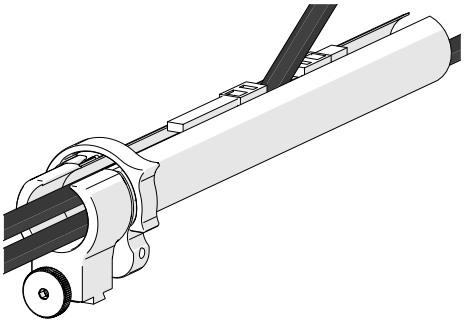


Fig. 73 - Flexibility

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. 72)*.
4. When necessary, the two zippers may be opened to allow cables to exit the tube anywhere between the ends *(Fig. 73)*.

4.8.3. Clamp Setup

If the tube becomes disconnected from the cable management dovetail mount, follow these instructions to re-attach the cable management 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 cable management dovetail mount *(Fig. 74)*. 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. 75)*.
4. Tighten the clamp screw *(Fig. 76)*.

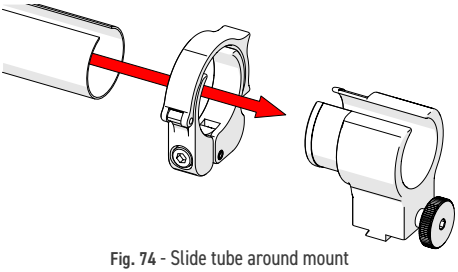


Fig. 74 - Slide tube around mount

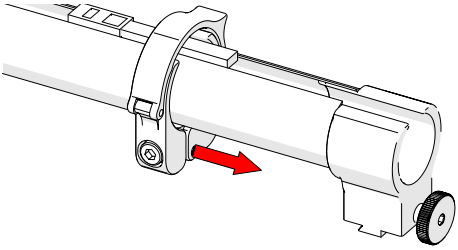


Fig. 75 - Slide clamp onto mount

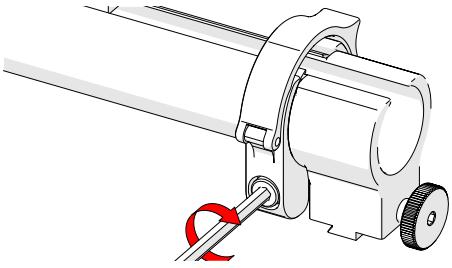


Fig. 76 - Tighten clamp screw

4.9. Battery Powered Optical Guide

WARNING! LASER RADIATION. Do not view directly with optical instruments. Class 1M laser product.

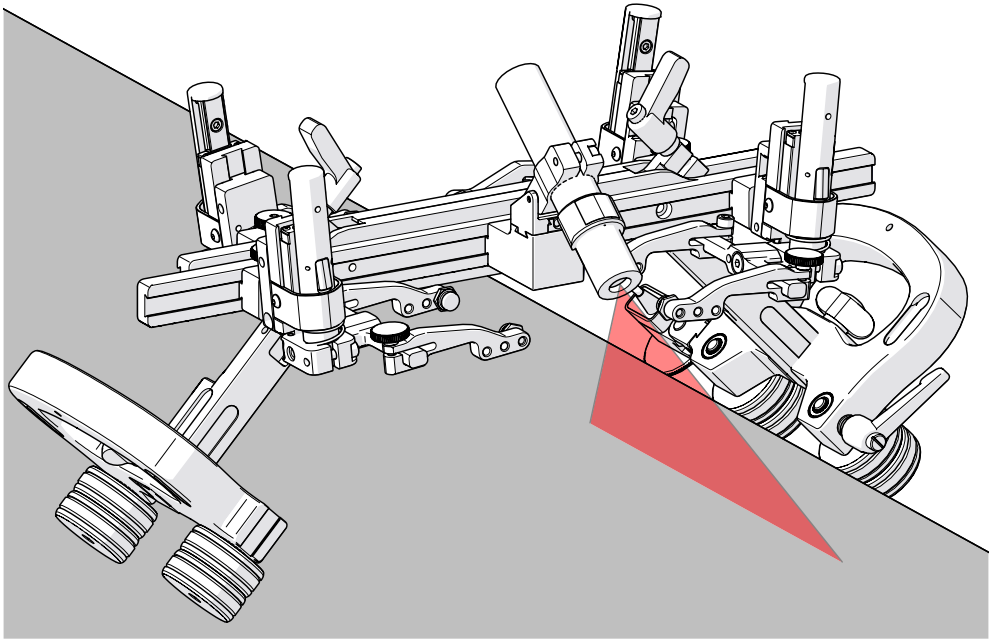


Fig. 77 - Battery powered optical guide

The battery powered optical guide provides a reference point useful for aligning the **STIX** to a given path *(i.e. a weld)*. The battery powered optical guide may be installed and setup as follows:

1. Secure the battery powered optical guide to the perpendicular mount *(Fig. 78)*.
2. Affix the perpendicular mount to the scanner's appropriate dovetail jaw *(Fig. 79)*.
3. Adjust the battery powered optical guide's friction pivot. Direct the beam at the inspection surface *(Fig. 80)*.

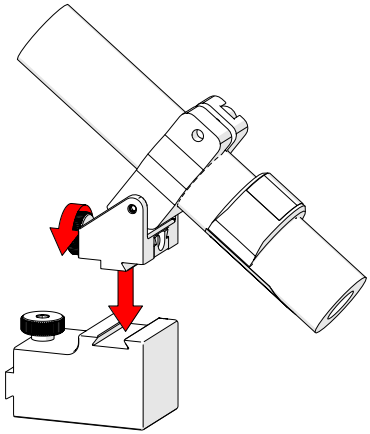


Fig. 78 - Attach 90° mount

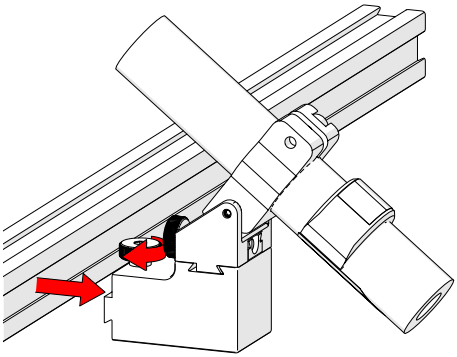


Fig. 79 - Attach to dovetail jaw

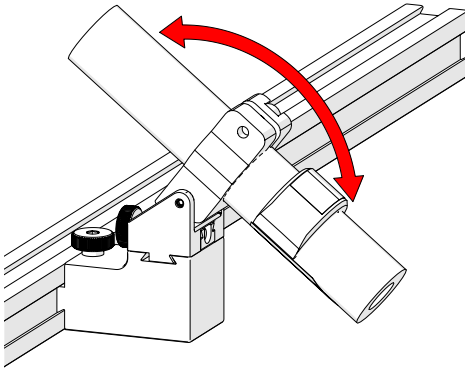


Fig. 80 - Aim optical guide

> ***NOTE:*** *The battery powered optical guide requires 1 AA battery for operation.*

4.10. Preamp Bracket

Intended Use:

- The **STIX** preamp bracket is intended to mount objects *(e.g. preamps, splitters, etc.)* that:
- have a maximum weight of 1.36 kg *(3 lb)*
- are attached to the **STIX** with a lanyard or probe cables strong enough to prevent the object from falling
- have smooth edges so as not to cut the preamp velcro strap

To install and use the preamp, follow these steps:

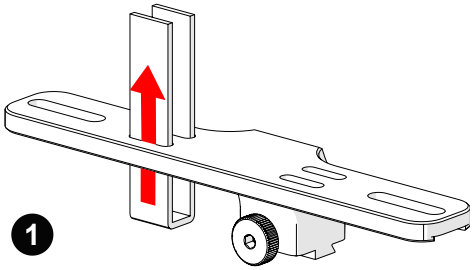


Fig. 81 - Insert velcro straps

The preamp bracket mounts to any dovetail groove to hold a preamp. Compatible with most standard preamps, use the adjustable screw mounting channel on the bottom of the bracket to attach a preamp. The preamp bracket may also be ordered with velcro straps used to hold the preamp.

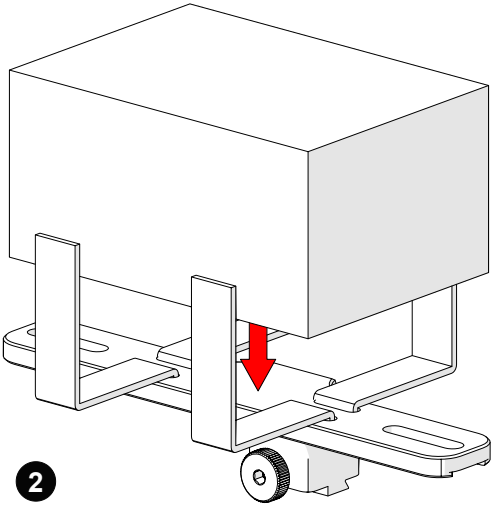


Fig. 82 - Place preamp and wrap velcro

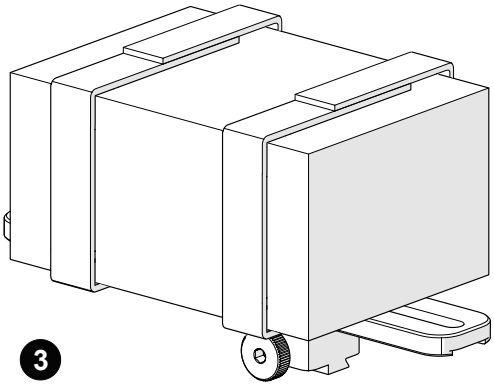


Fig. 83 - Mount bracket on a frame bar

5.1. Configurations

5.1.1. Circumferential, Two Probe Phased Array

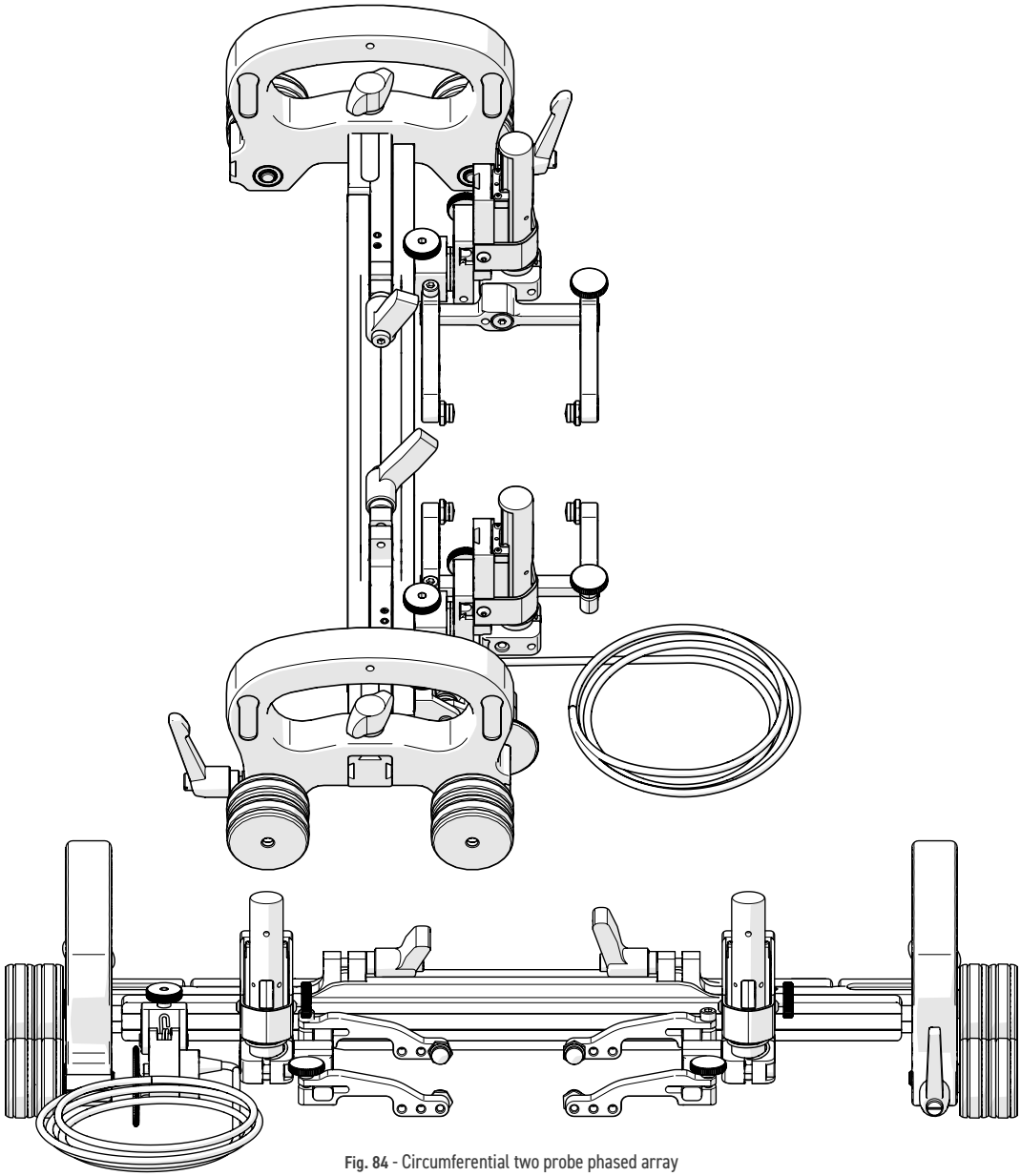


Fig. 84 - Circumferential two probe phased array

5.1.2. Circumferential, Four Probe

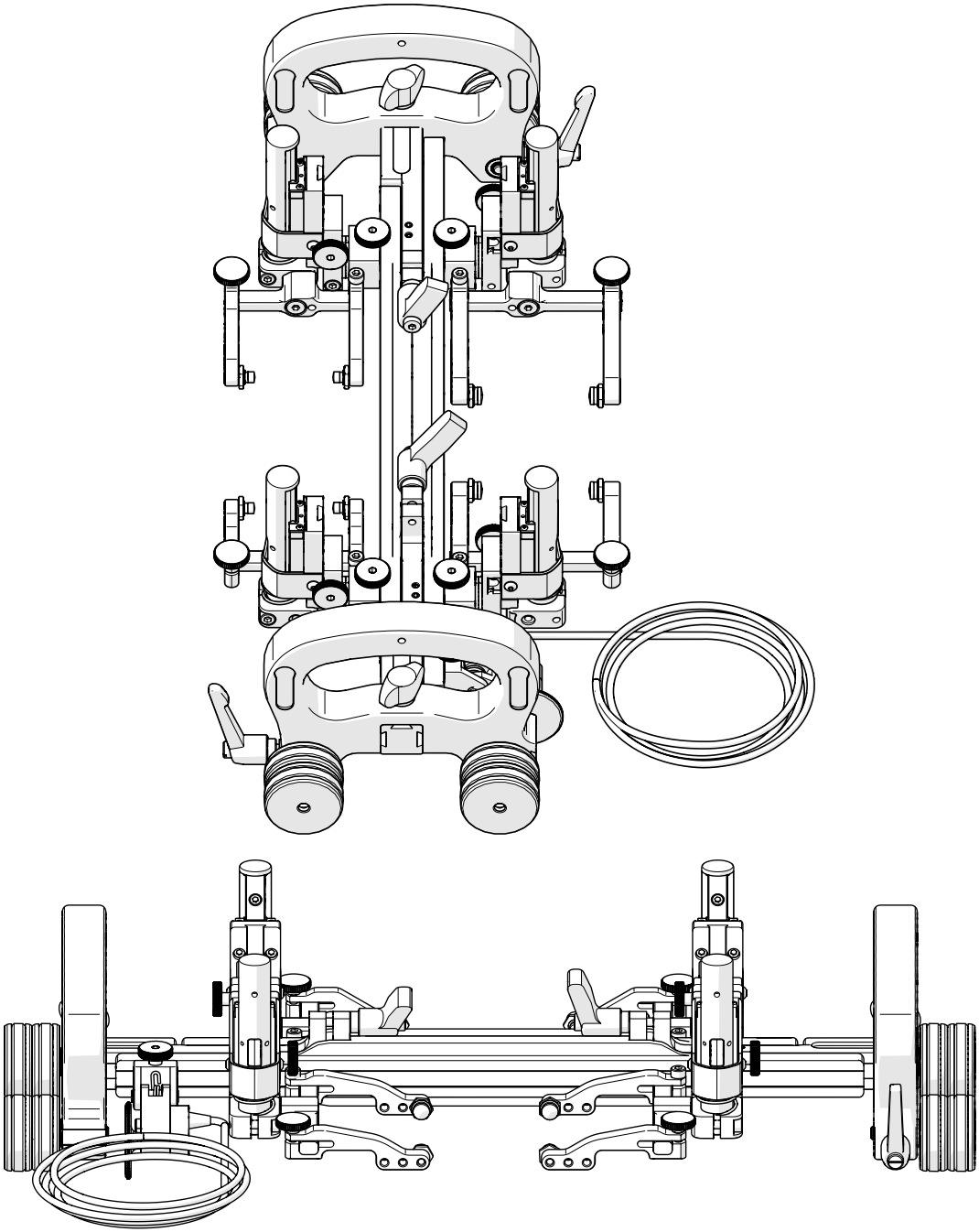


Fig. 85 - Circumferential four probe

5.1.3. Longitudinal, Two Probe Phased Array

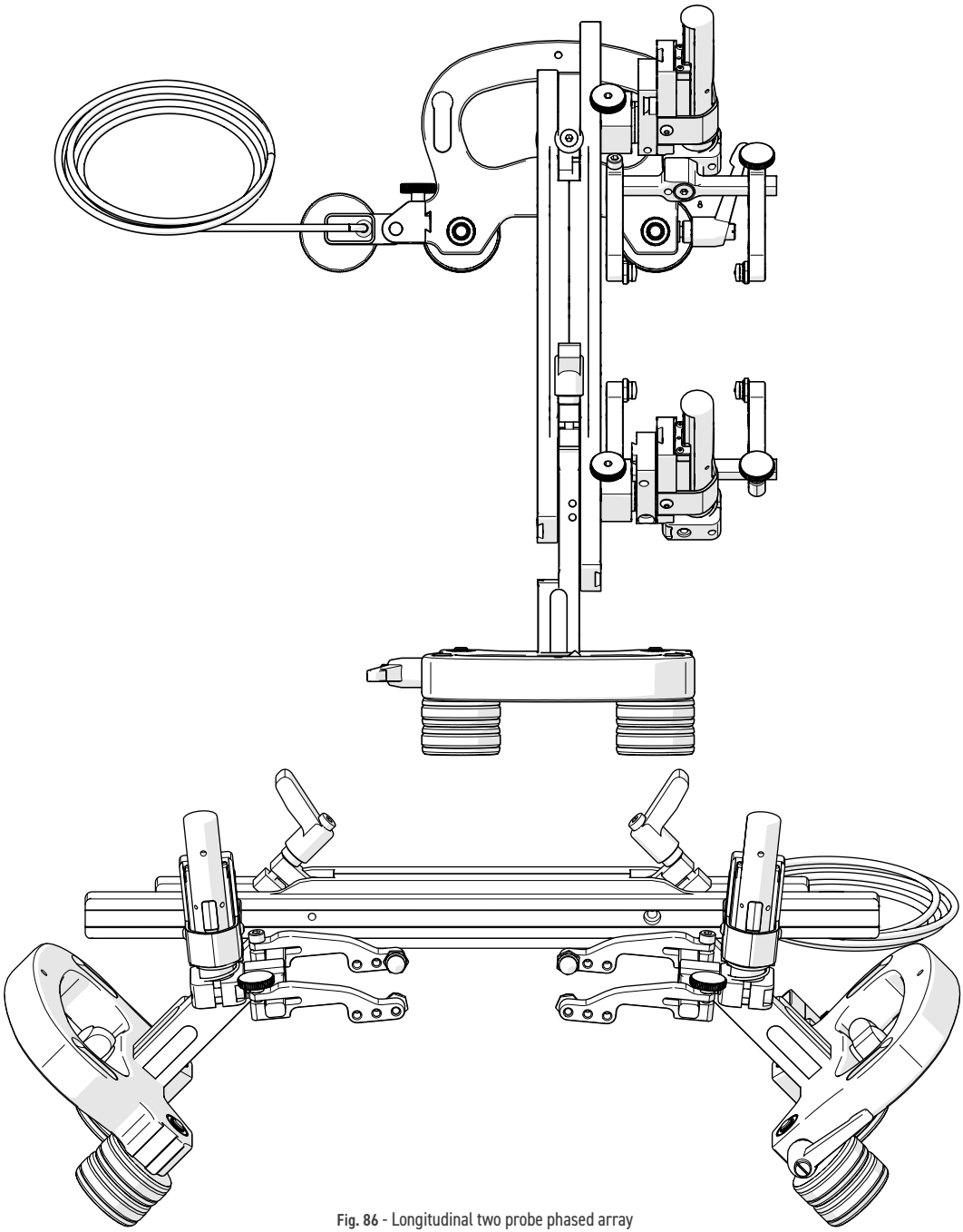


Fig. 86 - Longitudinal two probe phased array

5.1.4. Longitudinal, Four Probe

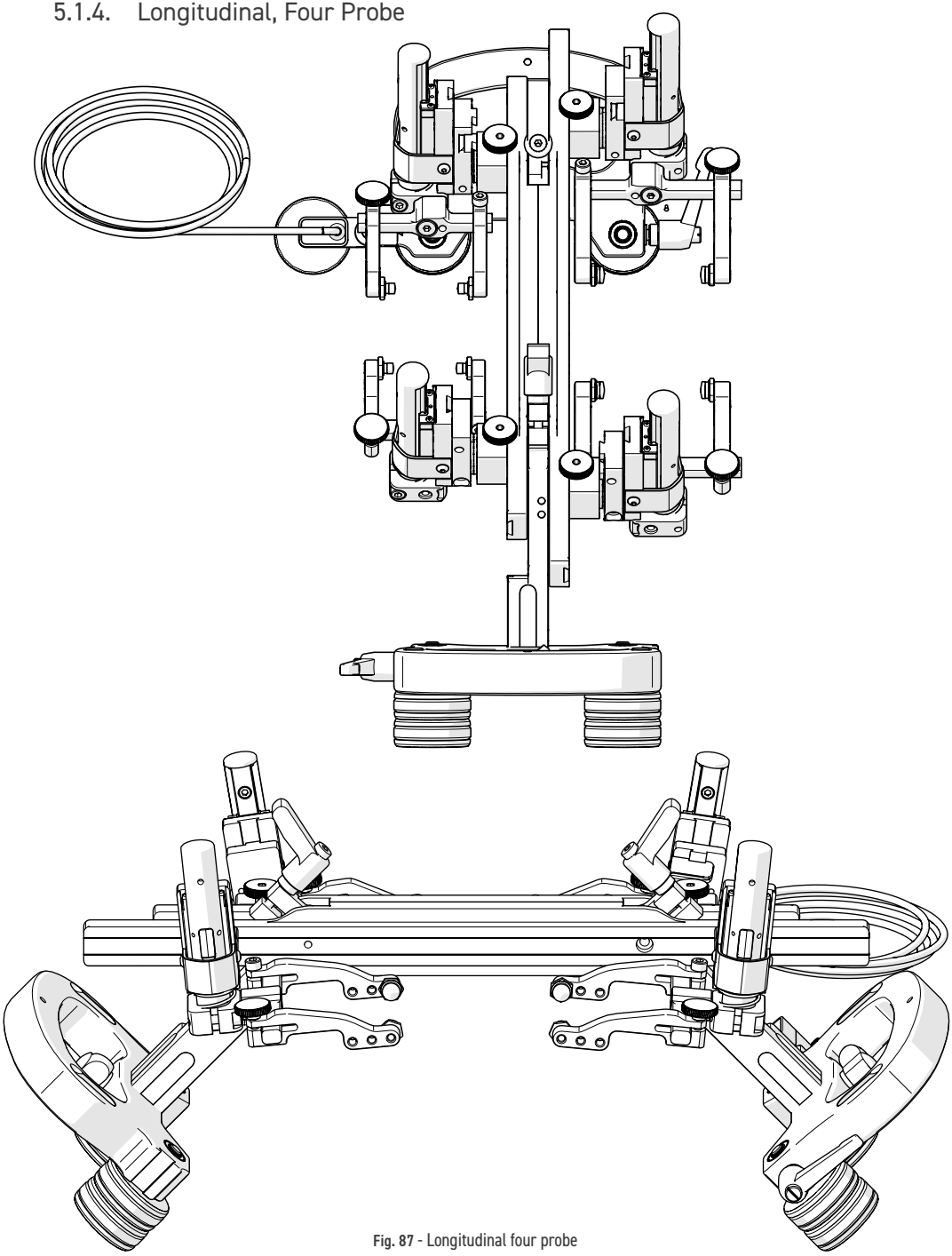


Fig. 87 - Longitudinal four probe

6.1. Setup of a STIX on a Circumferential Scan Surface

1. Mount the appropriate phased array and TOFD wedges *(Fig. 88)* to the probe holders *(see "Vertical Probe Holder" on page 14)*.
2. Ensure the ratchet levers of the dual pivot frame bar are tightly locked *(Fig. 89)*.

   > ***NOTE:*** *Wedges and probes will not be illustrated.*

3. Assemble the appropriate configuration to the scanner body *(Fig. 90)*.

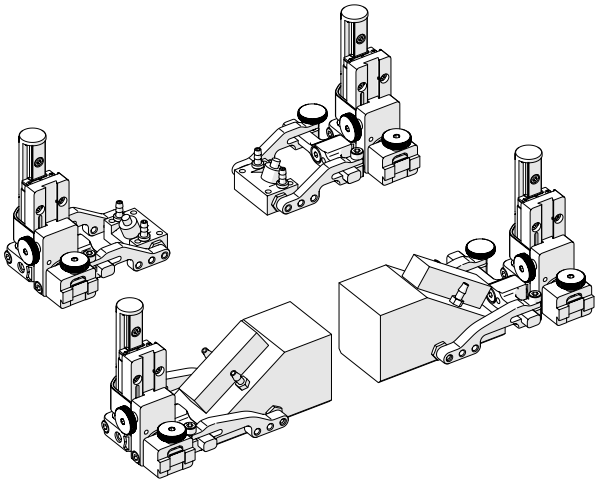


Fig. 88 - Mount probes and wedges to probe holders

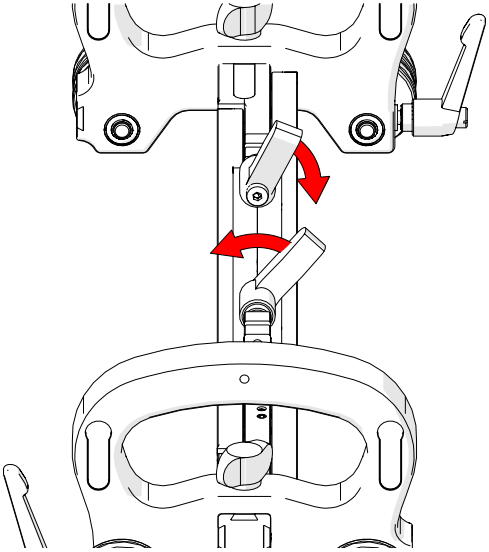


Fig. 89 - Lock dual pivot frame bar levers

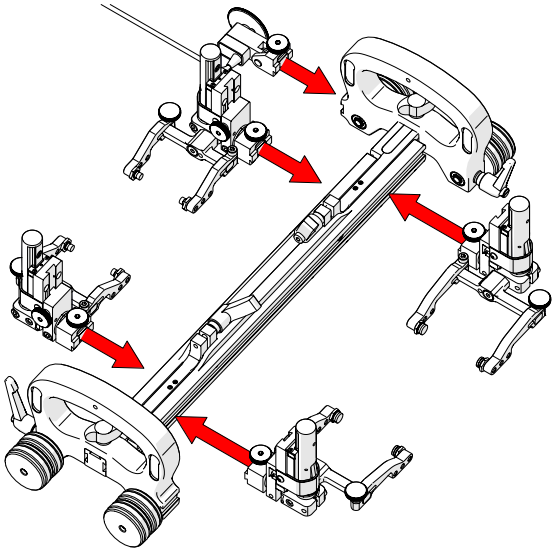


Fig. 90 - Mount probe holders and encoder

4. Mount the spring-loaded encoder *(see "Spring-Loaded Encoder" on page 13)* to the wheel block with handle *(Fig. 90)*. When possible, mount the spring-loaded encoder in a position that follows the scanner direction of travel. Mount the probe holders to the dual pivot frame bar *(see "Probe Holder Setup" on page 14)*.

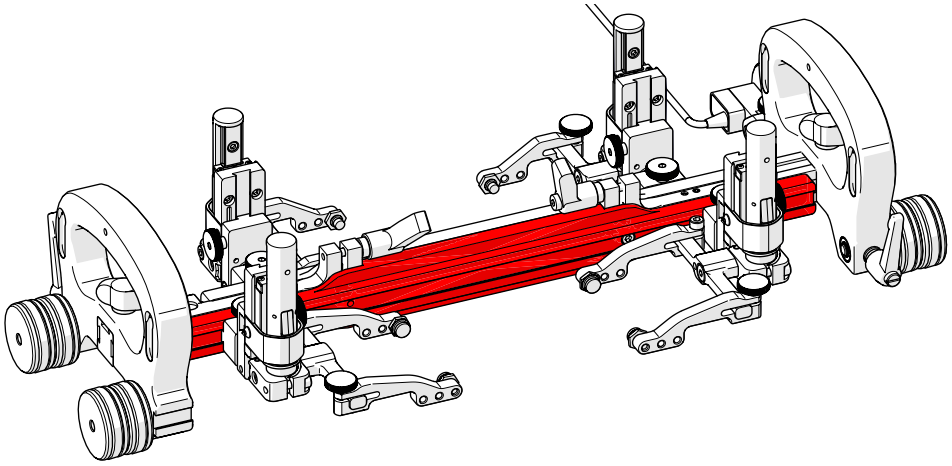


Fig. 91 - Phased array to longest bar

5. When performing a four probe scan, place phased array probe holders on the longest bar *(Fig. 91)* of the dual pivot frame bar *(Illustrated in red)*.
6. Ensure the brakes of the scanner are engaged *(see "Brakes" on page 12)*.

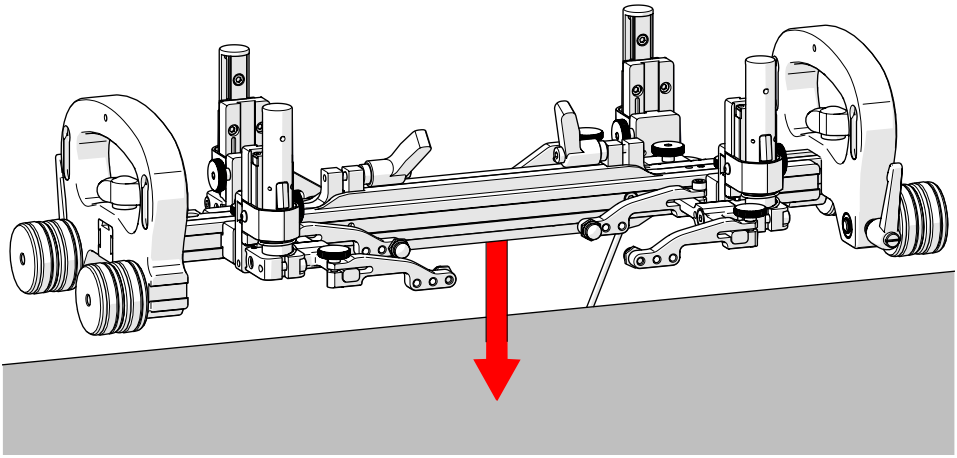


Fig. 92 - Place scanner on scan surface

7. Place the configured scanner on the scan surface *(Fig. 92)*.

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

8. Lower probe holders to the scan surface *(see "Vertical Probe Holder" on page 14)*, and release both brakes to begin the scanning procedure.

6.2. Setup of a STIX on a Longitudinal Scan Surface

1. Mount the appropriate phased array and TOFD wedges *(Fig. 93)* to the probe holders *(see "Vertical Probe Holder" on page 14)*.
2. Ensure the ratchet levers of the dual pivot frame bar are tightly locked *(Fig. 94)*

> ***NOTE:*** *Wedges and probes are not illustrated.*

3. When performing a four probe scan, place phased array probe holders on the longest bar *(Fig. 95)* of the dual pivot frame bar *(Illustrated in red)*.

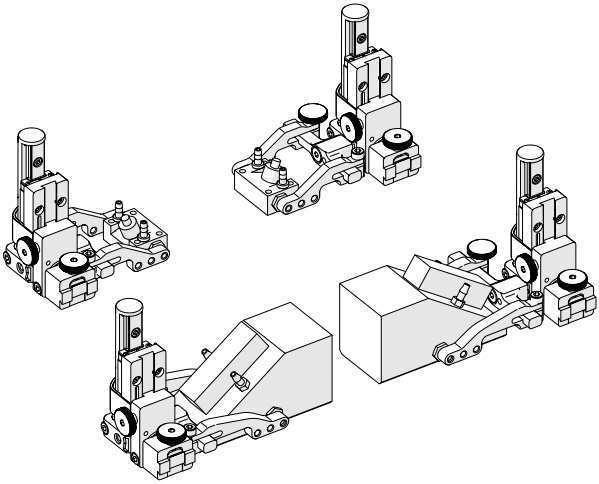


Fig. 93 - Mount probes and wedges to probe holders

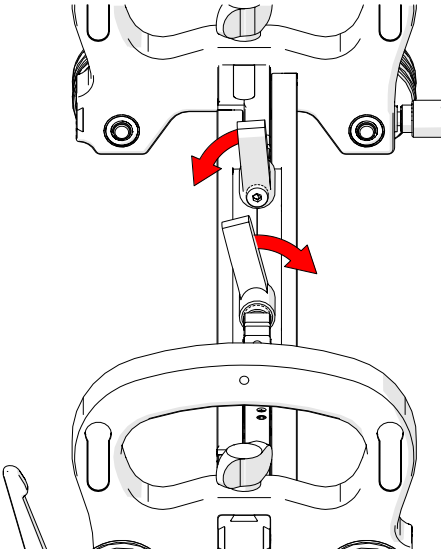


Fig. 94 - Lock dual pivot frame bar levers

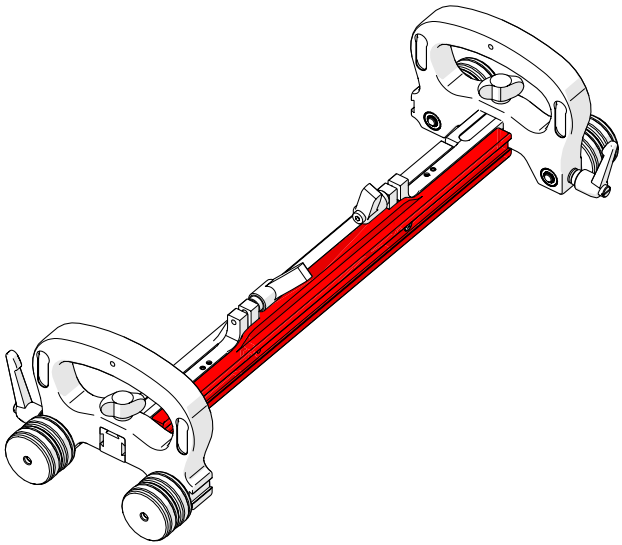


Fig. 95 - Phased array to longest bar

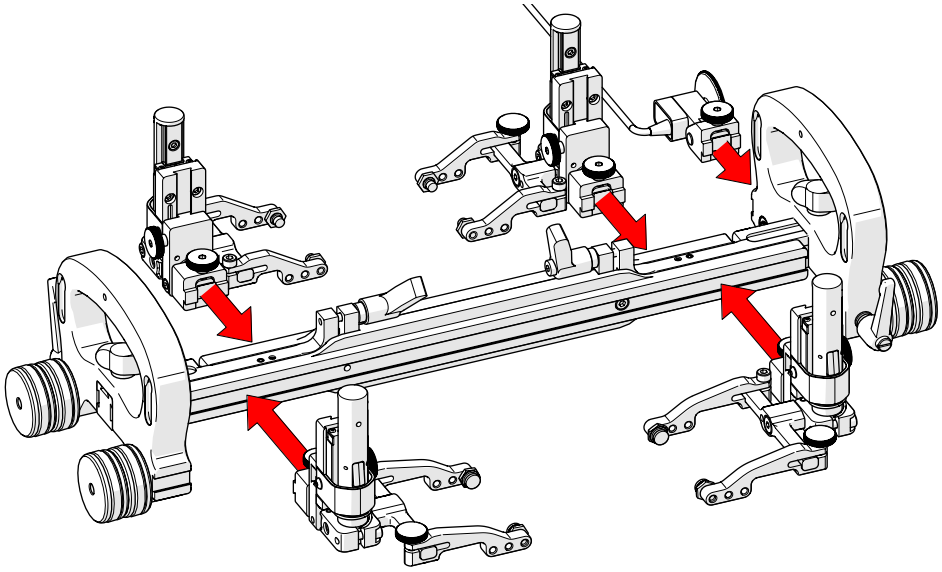


Fig. 96 - Mount probe holders and encoder

4. Assemble the appropriate configuration to the scanner body *(Fig. 96)*.
5. Mount the spring-loaded encoder *(see "Spring-Loaded Encoder" on page 13)* to the wheel block with handle *(Fig. 96)*. When possible, mount the spring-loaded encoder in a position that follows the scanner direction of travel. Mount the probe holders to the dual pivot frame bar *(see "Probe Holder Setup" on page 14)*.

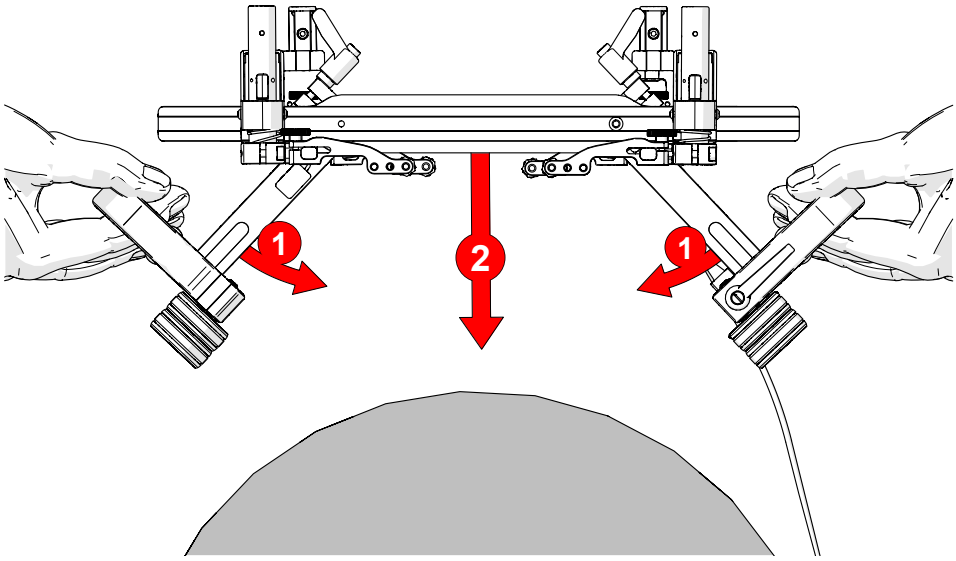


Fig. 97 - Place scanner on scan surface

6. Loosen the dual pivot frame bar's ratchet levers *(Fig. 94)* to pivot the frame.
7. Hold the scanner using the wheel block with handles, pivot the frame bars *(Fig. 97-1)* so the wheels are perpendicular to the tangent of the scan surface *(Fig. 98)* while simultaneously lowering the scanner to position *(Fig. 97-2)*.

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

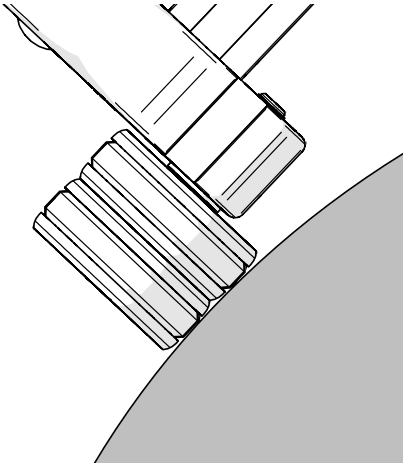


Fig. 98 - Wheels are flat on scan surface

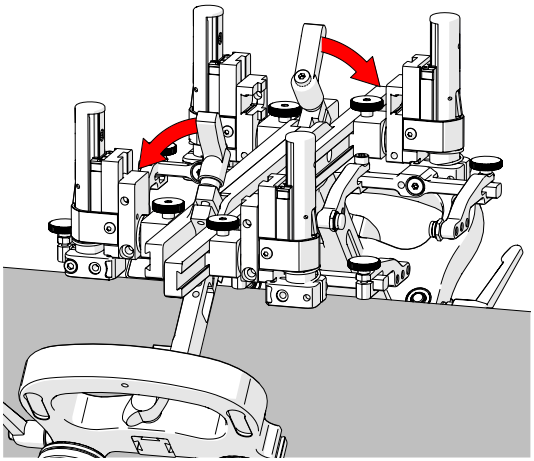


Fig. 99 - Tighten ratchet levers

8. Ensure the wheels are seated flat on the scan surface *(Fig. 98)*
9. Tighten the ratchet levers of the dual pivot frame bar *(Fig. 99)*.

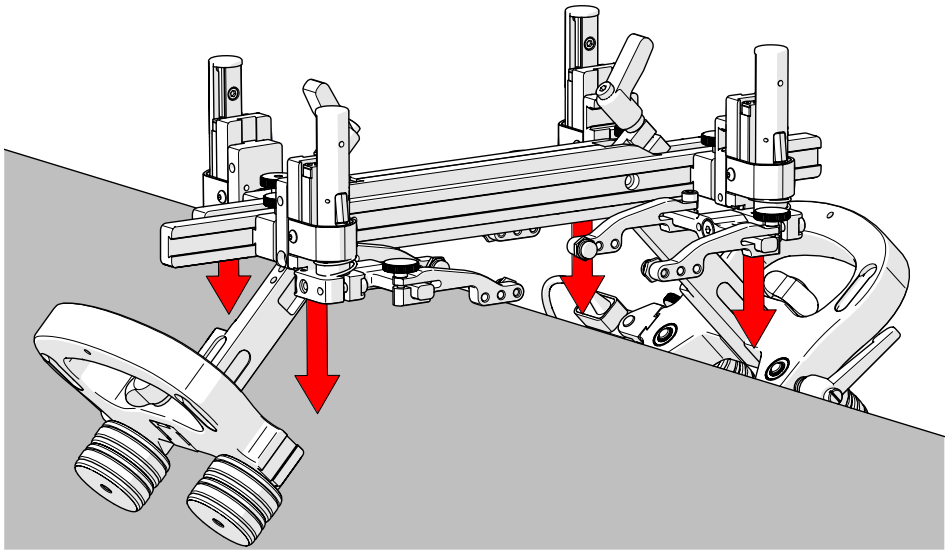


Fig. 100 - Adjust probe holder vertical adjustment

10. Adjust the height of the probe holders *(Fig. 100)* using the vertical adjustment knob *(see "Probe Holder Vertical Adjustment" on page 15).*

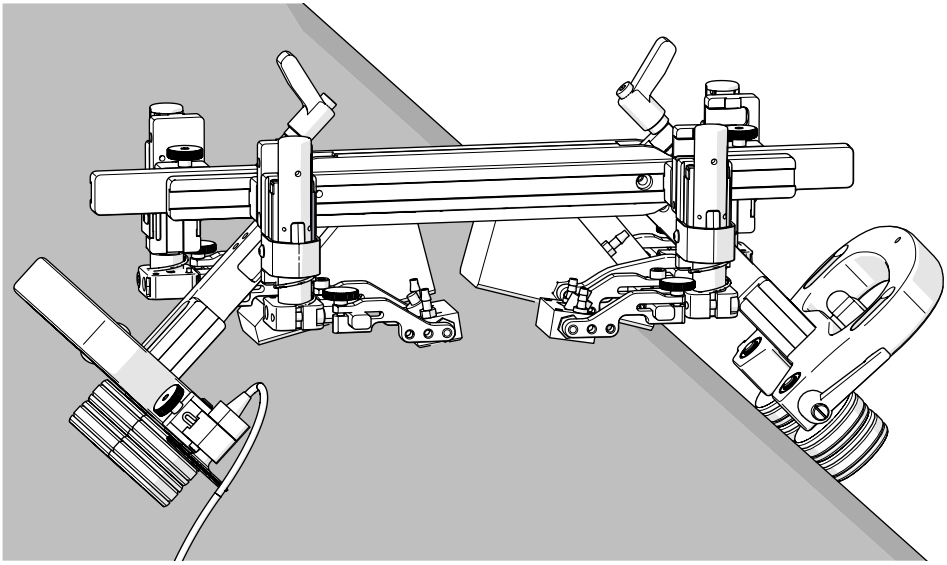


Fig. 101 - STIX system prepared for scanning

6.3. Additional Set-up Information

The following steps may be required or helpful during certain scan situations.

6.3.1. Longitudinal probe holder adjustment

When scanning pipe diameters less than 30.5 cm *(12 in)*, longitudinal adjustment of the probe holders may be required.

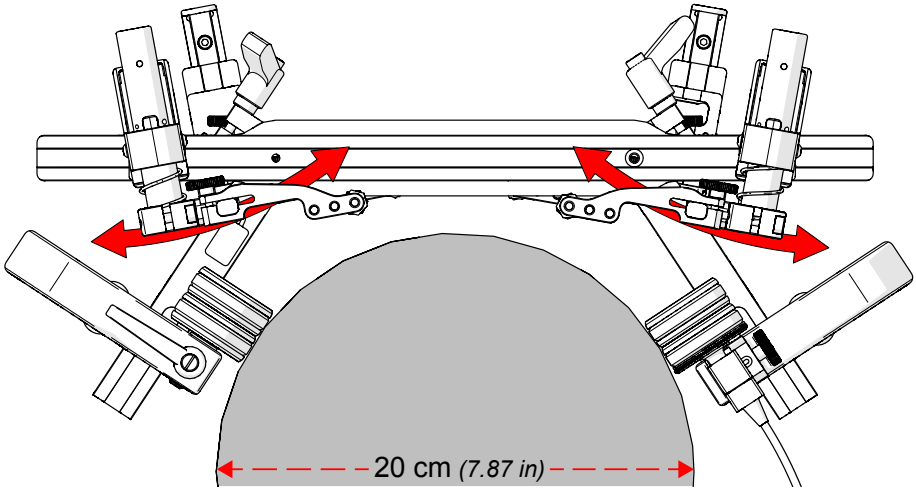


Fig. 102 - Longitudinal probe holder adjustment

1. Further information regarding longitudinal probe holder adjustment is available *(see "Probe Holder Longitudinal Adjustment" on page 17).*

6.3.2. Dual pivot frame bar height adjustment

Adjusting the position of the wheel blocks with handles can lower the dual pivot frame bar towards the scan surface if required.

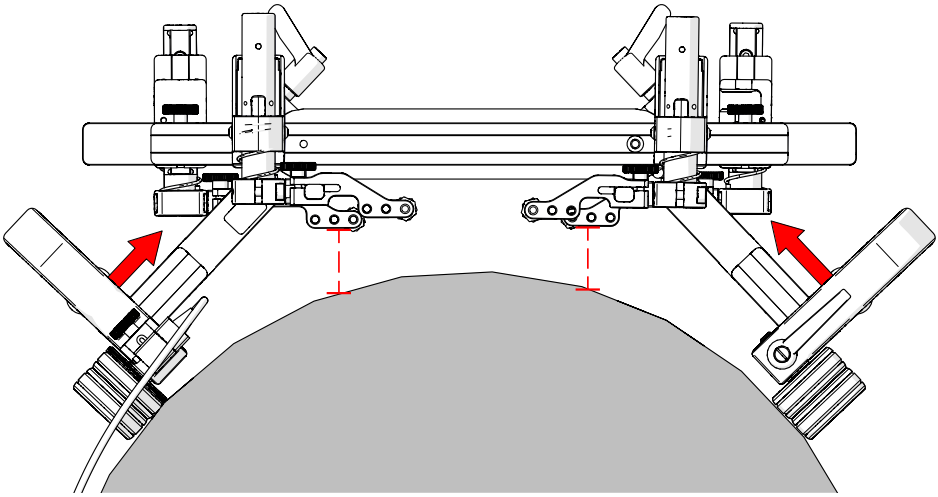


Fig. 103 - Wheel block positioning

1. Loosen the wheel block with handle wing knob.
2. Use the measurement increments *(Fig. 18)* to position the wheel block with handle on each side of the dual pivot frame bar *(see "Wheel Block with Handle Positioning" on page 9).*

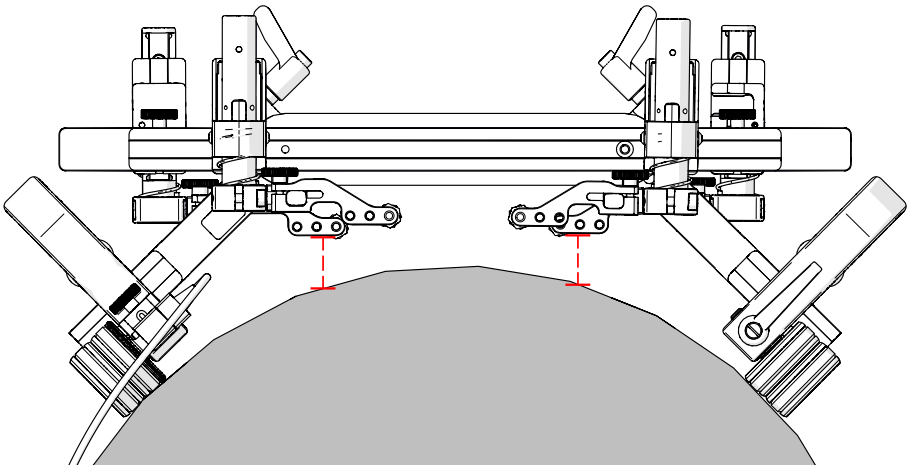


Fig. 104 - Dual pivot frame bar lowered towards scan surface

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.*

Problem	Possible Cause	Solution
Encoder is not functioning.	The instrument is not correctly set up.	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 *(contact Jireh Industries Ltd. on page 1)*.

SERVICE AND REPAIR

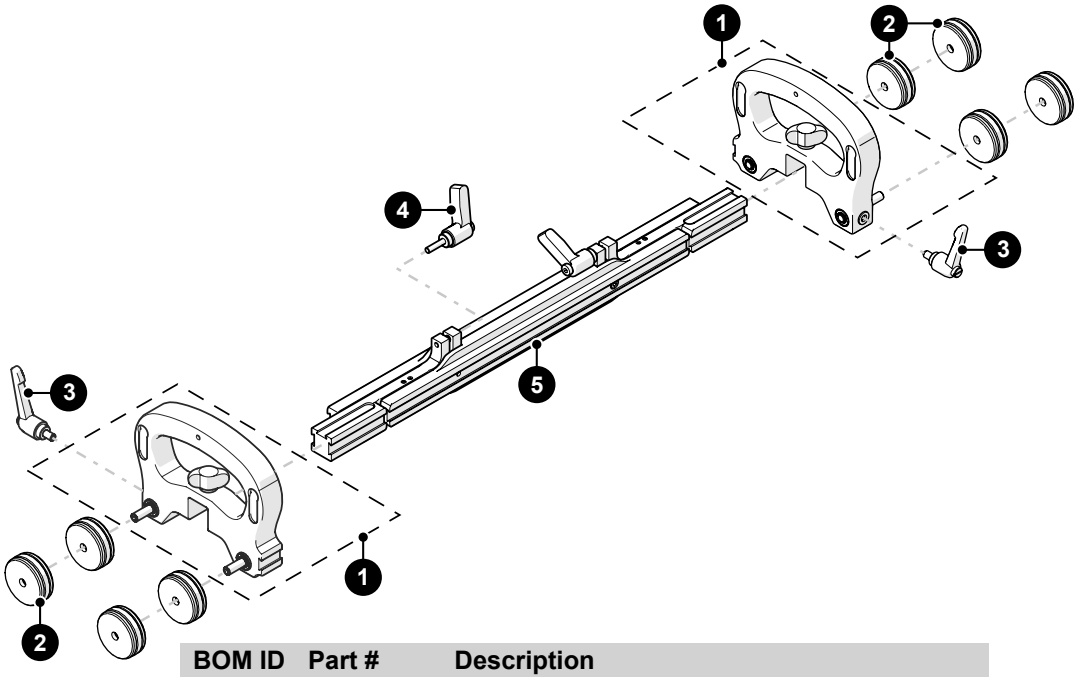
WARNING! DO NOT DISASSEMBLE. No user-serviceable parts. Disassembling any of the components in this product, beyond the instructions in this user manual, could void the regulatory certifications and/or effect the safety of the product.

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.*

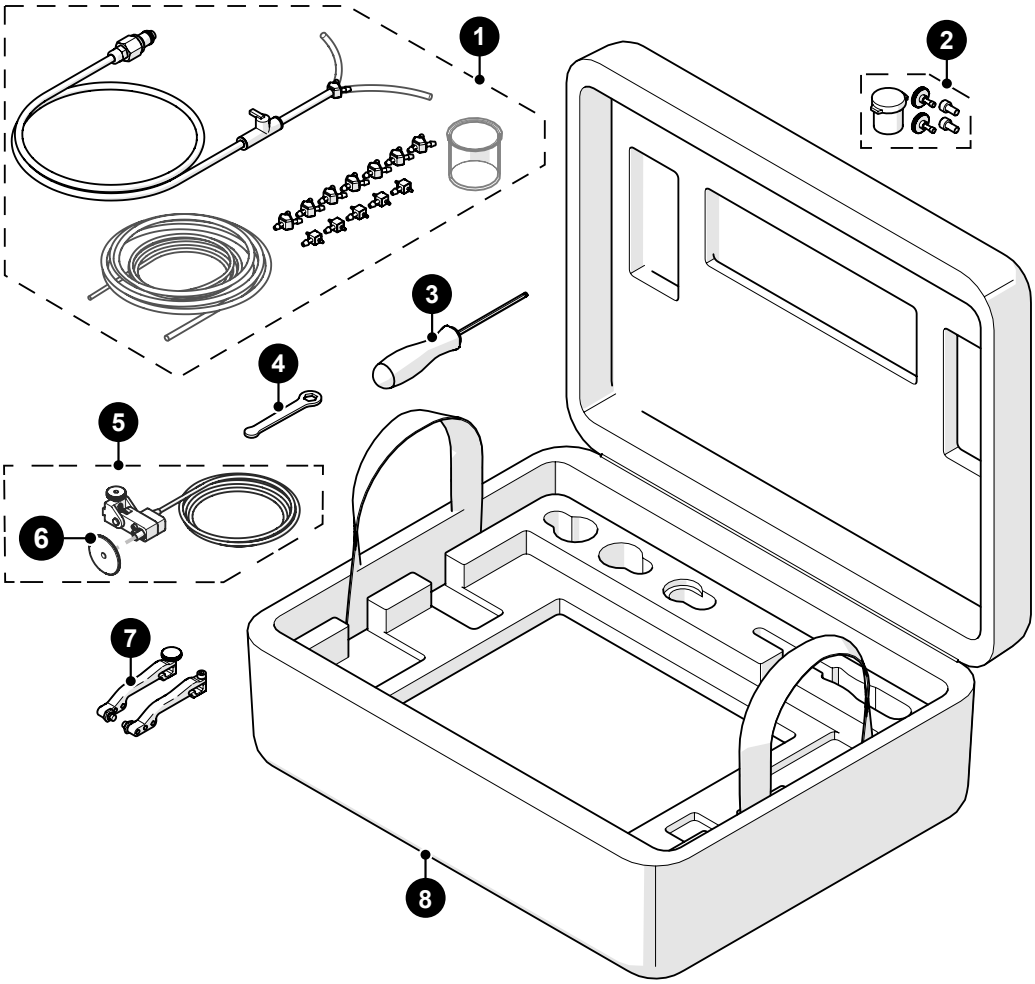
10.1. Scanner



BOM ID	Part #	Description
1	BGS058	Wheel Block with Handle *(wheels not included)*
2	BTS031	Magnetic Wheel *(single)*
3	BTS018	Brake Handle
4	EA342	Ratchet Lever
5	BGS065	Dual Pivot Frame Bar, 40 cm *(15.74 in)*

Fig. 105 - STIX scanner parts

10.2. Kit Components



BOM ID	Part #	Description
1	CMG007	Irrigation Kit: 4 mm ID, *(7/16 in quick connect)*
2	PHG014	Probe Holder Spare Parts Kit
3	EA414	Hex Driver: 3 mm
4	EA470	3/8 in Wrench
5	BGS053-X	Spring-Loaded Encoder *(see Encoder Connector Type)*
6	BG0069	Encoder Wheel, for spring-loaded encoder
7	PHG012-BYY	Probe Holder Arm Set: Long Drop Arms *(see Pivot Button Style)*
8	BGA005	STIX Case

Fig. 106 - STIX kit components

10.2.1. 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 / Eddyfi Ectane 2	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. 107 - Encoder connector types

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

10.3. Accessories

10.3.1. Preamp Bracket

Part #	Description
CES029	Preamp Bracket
CES029-V	Preamp Bracket with Velcro

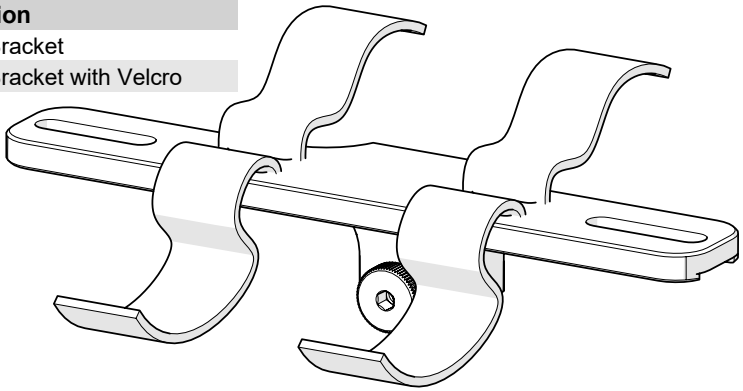
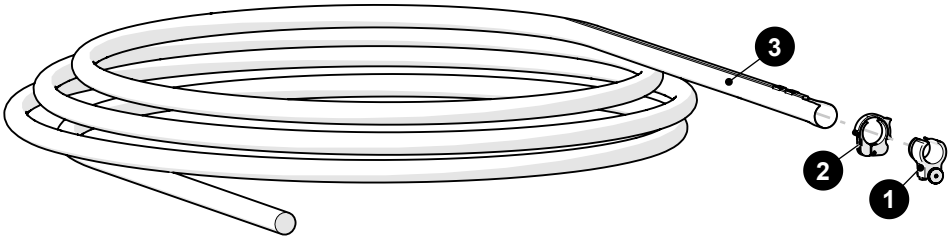


Fig. 108 - Pre-amp bracket

10.3.2. Cable Management



BOM ID	Part #	Description
1	CES067	Cable Management Mount
2	CES066	Cable Management Clamp
3	*see Cable Management Sleeving*	

Fig. 109 - Cable management

10.3.3. Cable Management Length

Part #	Length
CX0141	4.5 m *(14.8 ft)*
CX0145	9.5 m *(31.2 ft)*

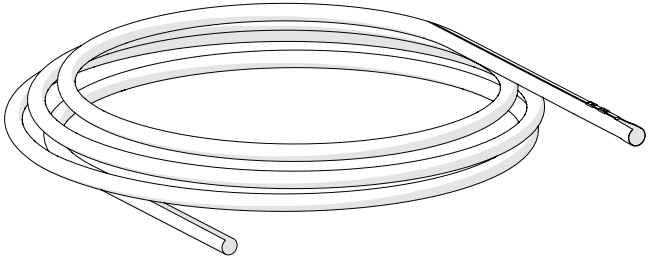
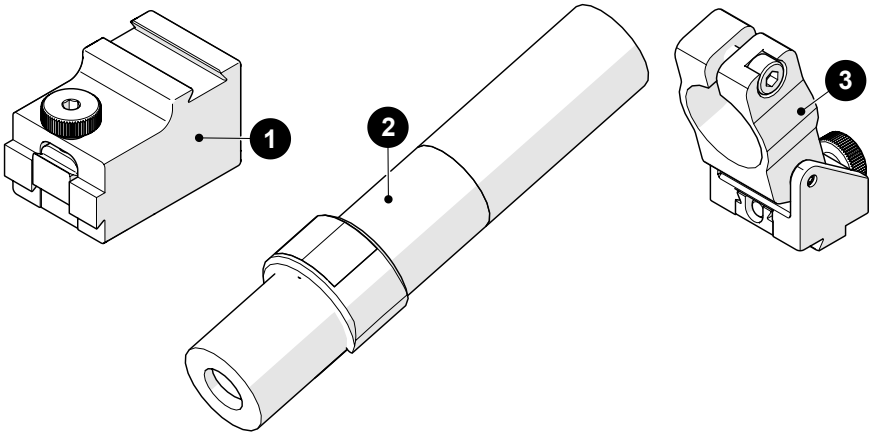


Fig. 110 - Cable management length

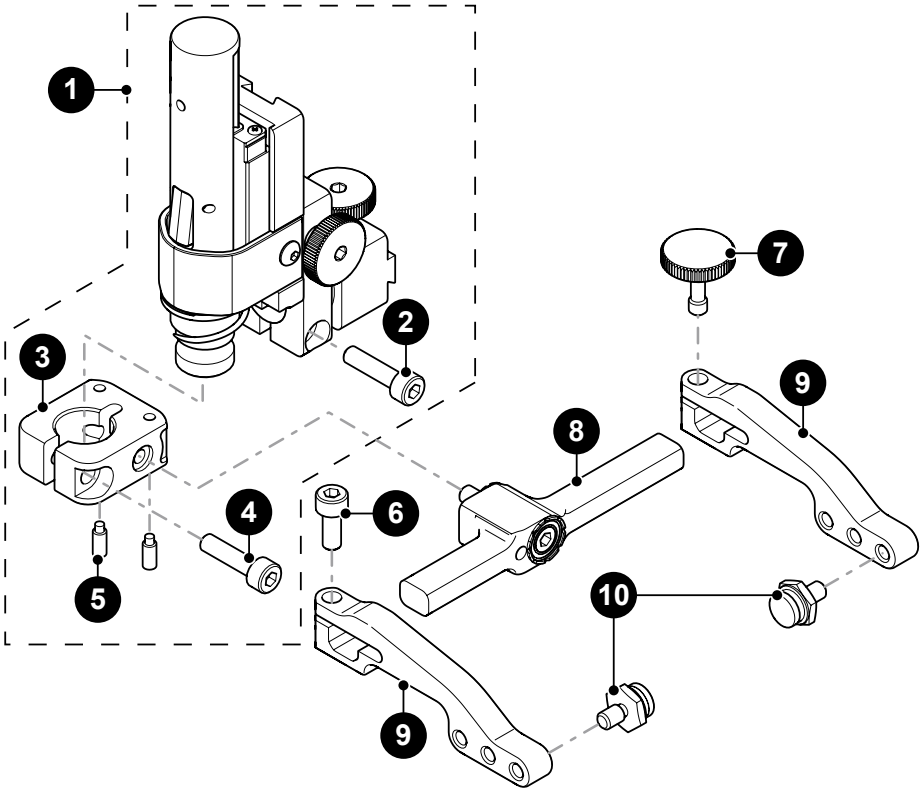
10.3.4. Battery Powered Optical Guide



BOM ID	Part #	Description
1	BGS068	Perpendicular Dovetail Mount
2	CXS082	Optical Guide Clamp
3	JV024	Line Laser: battery powered, class 1

Fig. 111 - Battery powered optical guide

10.4. Vertical Probe Holder



BOM ID	Part #	Description
1	PHS028	Vertical Probe Holder Subassembly
2	MA307	Screw, M4x16 mm High Strength SST SHCS
3	PH0087	Vertical Probe Holder Base
4	MD050-016	SHCS, M4 x 0.7 x 16 mm, SST
5	MA096	Screw, M3x8 mm Dog Point Set, SST
6	MD050-010	SHCS, M4 x 0.7 x 10 mm, SST
7	PH0082	Knurled Knob, M4 x 0.7 x 10 mm, 3 mm stand off, SST
8	*see Yoke Style*	
9	*see Arm Style*	
10	PH0011-X	Pivot Button Style *(see Pivot Button Style)*

Fig. 112 - Vertical probe holder

10.5. Probe Holder Components

10.5.1. Arm Style

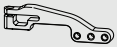
	Arm Style	Part #			Arm Style	Part #	
A	Standard, Flat	PH0090		**B**	Short, Flat	PH0089	
C	Long, Flat	PH0099		**D**	Standard, Drop	PH0093	
E	Short, Drop	PH0092		**F**	Long, Drop	PH0094	
G	Standard, Extra-Drop	PH0096		**H**	Short, Extra-Drop	PH0095	
I	Extra-Short, Flat	PH0159		**J**	Extra-Short, Drop	PH0161	

Fig. 113 - Probe holder arm selection

10.5.2. Yoke Style

	Yoke Style	Part #	Length			Yoke Style	Part #	Length	
S	Standard	PHS052	6.3 cm *(2.47 in)*		**W**	Wide	PHS063	7.9 cm *(3.06 in)*	

Fig. 114 - Probe holder yoke selection

10.5.3. 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)*	-	
08	Conical Head	-		**09**	5 mm *(0.197 in)* Internal	Zetec PA/TOFD	

Fig. 115 - Probe holder pivot 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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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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