EVIDENT

ChainSCANNER
Chain-Link Mounted Scanner
User's Manual

10-049448-01EN — Rev. 2
August 2024

This instruction manual contains essential information on how to use this Evident product safely and effectively. Before using this product, thoroughly review this instruction manual. Use the product as instructed.
Keep this instruction manual in a safe, accessible location.

EVIDENT CANADA, INC., 3415, rue Pierre-Ardouin, Quebec (Quebec) G1P 0B3 Canada

This document was prepared with particular attention to usage to ensure the accuracy of the information contained therein, and corresponds to the version of the product manufactured prior to the date appearing on the title page. There could, however, be some differences between the manual and the product if the product was modified thereafter.

The information contained in this document is subject to change without notice.

Part number: 10-049448-01EN
Rev. 2
August 2024

Printed in Canada

Table of Contents

List of Abbreviations

EFUP	environment-friendly use period
ICD	implantable cardioverter defibrillator
PPS	probe positioning system

Important Information — Please Read Before Use

Intended Use

The ChainSCANNER system is designed to perform nondestructive inspections on industrial and commercial materials.

WARNING

Do not use the ChainSCANNER for any purpose other than its intended use. It must never be used to inspect or examine human or animal body parts.

Instruction Manual

This instruction manual contains essential information on how to use this product safely and effectively. Before using this product, thoroughly review this instruction manual. Use the product as instructed.

Keep this instruction manual in a safe, accessible location.

IMPORTANT

Some of the details of components illustrated in this manual may differ from the components installed on your device. However, the operating principles remain the same.

Device Compatibility

Only use this device with the approved ancillary equipment provided by Evident. Equipment provided by Evident and approved for use with this device is described later in this manual.

CAUTION

Always use equipment and accessories that meet Evident specifications. Using incompatible equipment could cause equipment malfunction and/or damage, or human injury.

Repair and Modification

This device does not contain any user-serviceable parts. Opening the device might void the warranty.

CAUTION

In order to prevent human injury and/or equipment damage, do not disassemble, modify, or attempt to repair the device.

Safety Symbols

The following safety symbols might appear on the device and in the instruction manual:

 General warning symbol

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

 High voltage warning symbol

This symbol is used to alert the user to potential electric shock hazards greater than 1000 volts. All safety messages that follow this symbol shall be obeyed to avoid possible harm.

Safety Signal Words

The following safety signal words might appear in the documentation of the device:

 **DANGER**

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

 **WARNING**

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

CAUTION

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

Note Signal Words

The following note signal words could appear in the documentation of the device:

IMPORTANT

The IMPORTANT signal word calls attention to a note that provides important information, or information essential to the completion of a task.

NOTE

The NOTE signal word calls attention to an operating procedure, practice, or the like, that requires special attention. A note also denotes related parenthetical information that is useful, but not imperative.

TIP

The TIP signal word calls attention to a type of note that helps you apply the techniques and procedures described in the manual to your specific needs, or that provides hints on how to effectively use the capabilities of the product.

Safety

Before turning on the device, verify that the correct safety precautions have been taken (see the following warnings). In addition, note the external markings on the device, which are described under “Safety Symbols.”

Warnings

WARNING

General Warnings

- Carefully read the instructions contained in this instruction manual prior to turning on the device.
- Keep this instruction manual in a safe place for further reference.
- Follow the installation and operation procedures.
- It is imperative to respect the safety warnings on the device and in this instruction manual.
- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment could be impaired.
- Do not install substitute parts or perform any unauthorized modification to the device.
- Service instructions, when applicable, are for trained service personnel. To avoid the risk of electric shock, do not perform any work on the device unless qualified to do so. For any problem or question regarding this device, contact Evident or an authorized Evident representative.
- Do not touch the connectors directly by hand. Otherwise, a malfunction or electric shock may result.
- Do not allow metallic or foreign objects to enter the device through connectors or any other openings. Otherwise, a malfunction or electric shock may result.

WARNING

Electrical Warning

The device must only be connected to a power source corresponding to the type indicated on the rating label.

CAUTION

If a non-approved power supply cord not dedicated to Evident products is used, Evident will not be able to ensure the electrical safety of the equipment.

Equipment Disposal

Before disposing of the ChainSCANNER, check your local laws, rules, and regulations, and follow them accordingly.

BC (Battery Charger - California, USA Community)

The BC marking indicates that this product has been tested and complies with the Appliance Efficiency Regulations as stated in the California Code of Regulations Title 20, Sections 1601 through 1608 for Battery Charger Systems. The internal battery charger within this device has been tested and certified pursuant to the California Energy Commission's (CEC) requirements; this device is listed on the online CEC's (T20) database.

CE (European Conformity)

This device complies with the requirements of directive 2014/30/EU concerning electromagnetic compatibility, directive 2014/35/EU concerning low voltage, and directive 2015/863 which amends 2011/65/EU concerning restriction of hazardous substances (RoHS). The CE marking is a declaration that this product conforms to all the applicable directives of the European Community.

UKCA (United Kingdom)

This device complies with the requirements of the Electromagnetic Compatibility Regulations 2016, the Electrical Equipment (Safety) Regulations 2016, and the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012. The UKCA marking indicates compliance with the above regulations.

RCM (Australia)

The regulatory compliance mark (RCM) label indicates that the product complies with all applicable standards, and has been registered with the Australian Communications and Media Authority (ACMA) for placement on the Australian market.

WEEE Directive

In accordance with European Directive 2012/19/EU 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 your local Evident distributor for return and/or collection systems available in your country.

China RoHS

China RoHS is the term used by industry generally to describe legislation implemented by the Ministry of Information Industry (MII) in the People's Republic of China for the control of pollution by electronic information products (EIP).

The China RoHS mark indicates the product's Environment-Friendly Use Period (EFUP). The EFUP is defined as the number of years for which listed controlled substances will not leak or chemically deteriorate while in the product. The EFUP for the ChainSCANNER has been determined to be 15 years.

Note: The Environment-Friendly Use Period (EFUP) is not meant to be interpreted as the period assuring functionality and product performance.

电器电子产品有害物质限制使用标志

本标志是根据“电器电子产品有害物质限制使用管理办法”以及“电子电气产品有害物质限制使用标识要求”的规定，适用于在中国销售的电器电子产品上的电器电子产品有害物质使用限制标志。

（注意）电器电子产品有害物质限制使用标志内的数字为在正常的使用条件下有害物质等不泄漏的期限，不是保证产品功能性能的期间。

产品中有害物质的名称及含量

部件名称		有害物质					
		铅及其化合物 (Pb)	汞及其化合物 (Hg)	镉及其化合物 (Cd)	六价铬及其化合物 (Cr(Ⅵ))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
主体	机构部件	×	○	○	○	○	○
	光学部件	×	○	○	○	○	○
	电气部件	×	○	○	○	○	○
附件		×	○	○	○	○	○

本表格依据 SJ/T 11364 的规定编制。

○：表示该有害物质在该部件所有均质材料中的含量均在 GB/T26572 规定的限量要求以下。

×：表示该有害物质至少在该部件的某一均质材料中的含量超出 GB/T26572 规定的限量要求。

Korea Communications Commission (KCC)

Seller and user shall be noticed that this equipment is suitable for electromagnetic equipment for office work (class A) and it can be used outside the home. This device complies with the EMC requirements of Korea.

이 기기는 업무용 환경에서 사용할 목적으로 적합성평가를 받은 기기로서 가정용 환경에서 사용하는 경우 전파간섭의 우려가 있습니다 .

EMC Directive Compliance

This equipment generates and uses radio-frequency energy and, if not installed and used properly (that is, in strict accordance with the manufacturer's instructions), may cause interference. The ChainSCANNER has been tested and found to comply with the limits for an industrial device in accordance with the specifications of the EMC directive.

FCC (USA) Compliance

NOTE

This product has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the product is operated in a commercial environment. This product generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, might cause harmful interference to radio communications. Operation of this product in a residential area is likely to cause harmful interference, in which case you will be required to correct the interference at your own expense.

IMPORTANT

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

FCC Supplier's Declaration of Conformity

Hereby declares that the product,

Product name: ChainSCANNER
Model: ChainSCANNER

Conforms to the following specifications:

FCC Part 15, Subpart B, Section 15.107 and Section 15.109.

Supplementary information:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference.

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

Responsible party name:

EVIDENT SCINTIFIC, INC

Address:

48 Woerd Avenue, Waltham, MA 02453, USA

Phone number:

+1 781-419-3900

ICES-001 (Canada) Compliance

This Class A digital apparatus complies with Canadian ICES-001.

Cet appareil numérique de la classe A est conforme à la norme NMB-001 du Canada.

Warranty Information

Evident guarantees your Evident product to be free from defects in materials and workmanship for a specific period, and in accordance with conditions specified in the *Evident Terms and Conditions* available at https://evidentscientific.com/evident-terms/.

The Evident warranty only covers equipment that has been used in a proper manner, as described in this instruction manual, and that has not been subjected to excessive abuse, attempted unauthorized repair, or modification.

Inspect materials thoroughly on receipt for evidence of external or internal damage that might have occurred during shipment. Immediately notify the carrier making the delivery of any damage, because the carrier is normally liable for damage during shipment. Retain packing materials, waybills, and other shipping documentation needed in order to file a damage claim. After notifying the carrier, contact Evident for assistance with the damage claim and equipment replacement, if necessary.

This instruction manual explains the proper operation of your Evident product. The information contained herein is intended solely as a teaching aid, and shall not be used in any particular application without independent testing and/or verification by the operator or the supervisor. Such independent verification of procedures becomes increasingly important as the criticality of the application increases. For this reason, Evident makes no warranty, expressed or implied, that the techniques, examples, or procedures described herein are consistent with industry standards, nor that they meet the requirements of any particular application.

Evident reserves the right to modify any product without incurring the responsibility for modifying previously manufactured products.

Technical Support

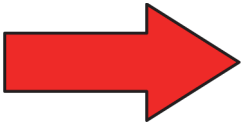
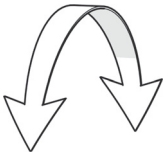
Evident is firmly committed to providing the highest level of customer service and product support. If you experience any difficulties when using our product, or if it fails to operate as described in the documentation, first consult the user's manual, and then, if you are still in need of assistance, contact our After-Sales Service.To locate the nearest service center, visit the *Service Centers* page on the Evident Scientific Web site https://www.evidentscientific.com/service-and-support/service-centers/.

Introduction

This manual provides instructions for assembling, installing, and operating the ChainSCANNER system. The ChainSCANNER manual pipe inspection scanner is for outside pipe diameters ranging from 76.2 mm to 965 mm (3 in. to 38 in.). The ChainSCANNER system enables position encoding on its two axes.

This manual is organized to provide you with a progressive understanding of the scanner's different functions. Each section, however, is complete in itself. This manual is therefore a useful reference.

Definition of Symbols

	Instructions to "look here" or to "see this part."
	Denotes movement. Instructs you to carry out action in a specified direction.
	Indicates alignment axis.
	Alerts you that the view has changed to a reverse angle.

Definition of Terms

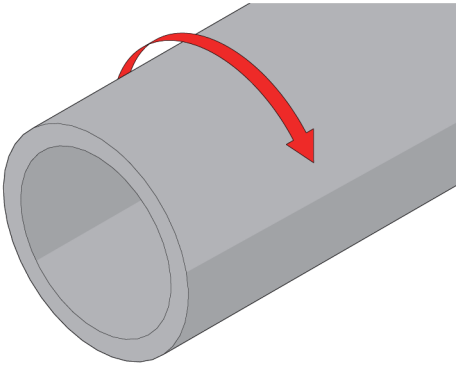


Figure i-1 Circumferential scanning

Circumferential	Direction of scan travel is around the circumference of the pipe/tube.

1. Overview

This chapter provides an overview of the ChainSCANNER components in the standard configuration. The main components of the scanner are shown in Figure 1-2 on page 24. A description of each component follows.

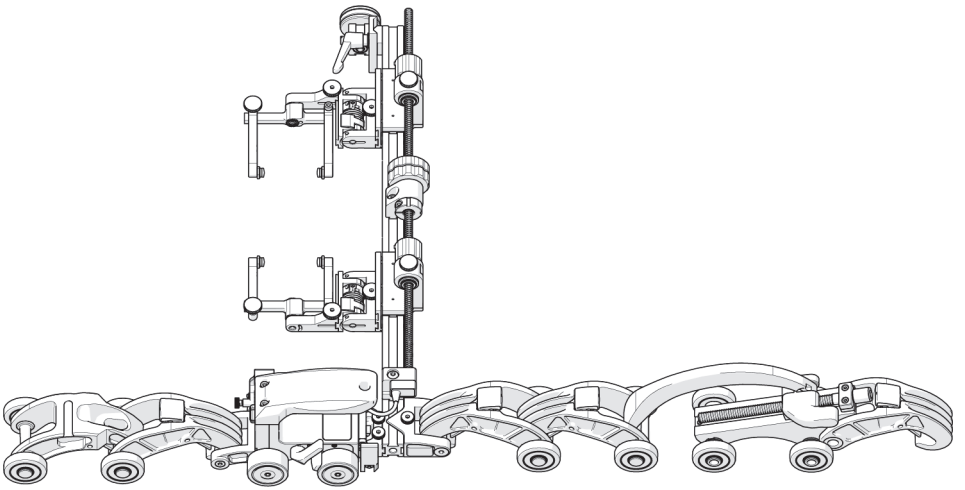


Figure 1-1 ChainSCANNER system

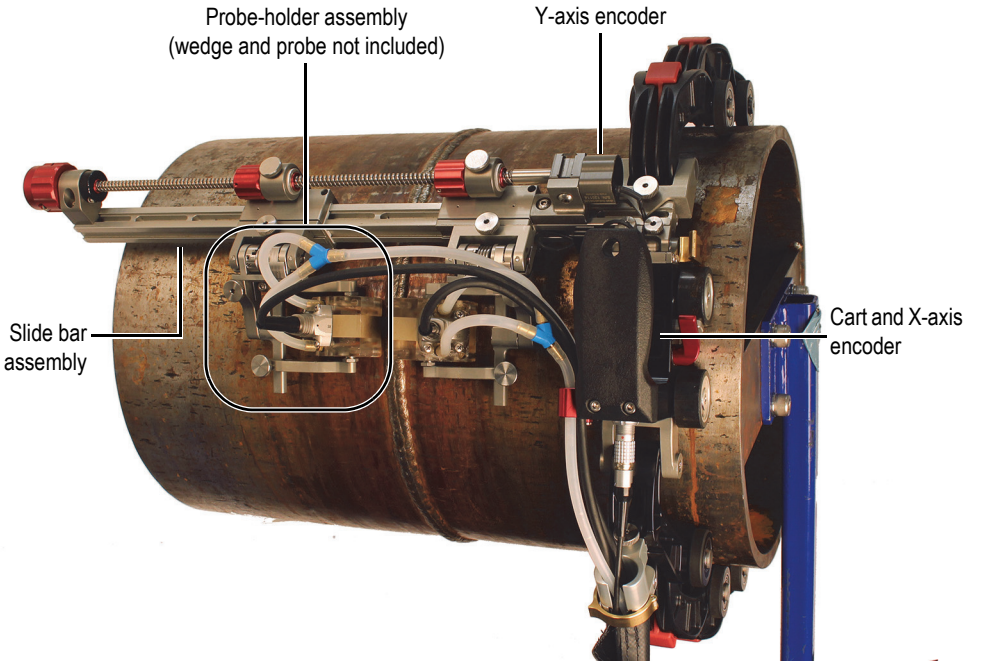


Figure 1-2 The ChainSCANNER main components

1.1 Base System Components

1.1.1 Cart Body

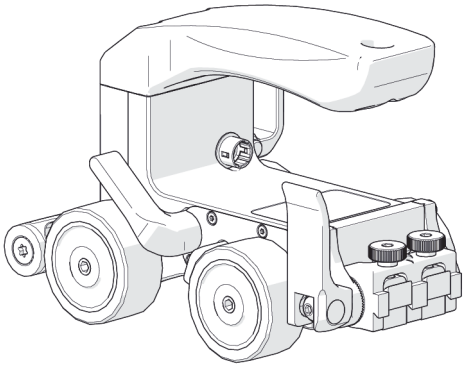


Figure 1-3 Cart

The cart body houses the positional encoder and provides a pivot nose for mounting frame bars and probe holders. The encoder connector is located at the rear of the cart, while the auxiliary connector is found under the handle (see Figure 1-3 on page 25).

1.1.2 Slip Joint Probe Holder

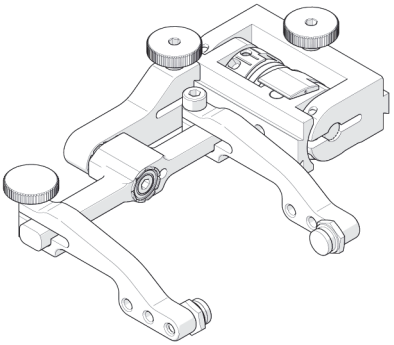


Figure 1-4 Slip joint probe holder

The low profile design of the slip joint probe holder requires minimal radial clearance (see Figure 1-4 on page 25). It is designed to carry many different types of probes and wedges.

1.1.3 Frame Bar

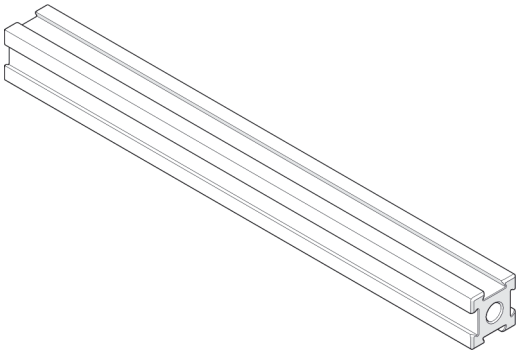


Figure 1-5 Frame bar

The frame bar provides a mount for probe holders, probe positioning systems, and other accessories (see Figure 1-5 on page 26).

1.2 QuickLink Components

The QuickLink components fasten the system circumferentially around a pipe or tube.

1.2.1 QuickLink

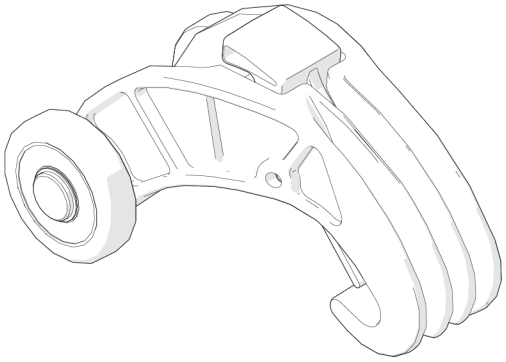


Figure 1-6 QuickLink

The QuickLinks connect to assemble the required length to mount the system on a pipe (see Figure 1-6 on page 27).

1.2.2 Dovetail QuickLink

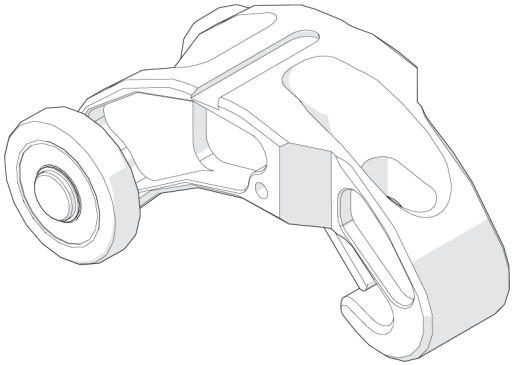


Figure 1-7 Dovetail QuickLink

The dovetail QuickLink connects to QuickLinks, providing a mounting point for accessories such as cable management (see Figure 1-7 on page 27).

1.2.3 QuickLink Buckle

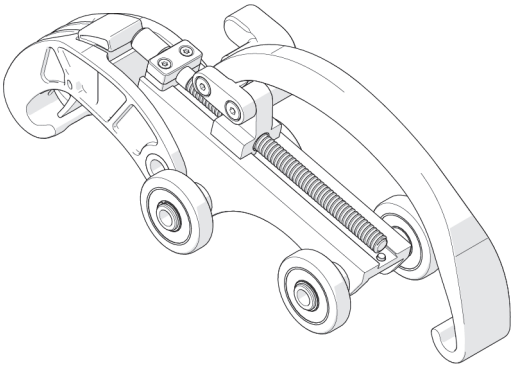


Figure 1-8 QuickLink buckle

The QuickLink buckle enables adjustment of the chain tension and provides the connection point of the QuickLinks assembly (see Figure 1-8 on page 28).

1.2.4 QuickLink Mounting Bracket

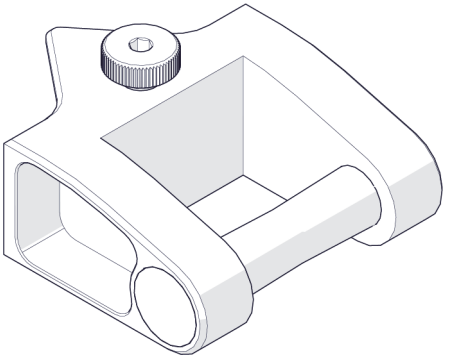


Figure 1-9 QuickLink mounting bracket

The QuickLink mounting bracket attaches to a frame bar and provides a connection point for QuickLinks (see Figure 1-9 on page 28).

1.3 Stabilizer Wheel

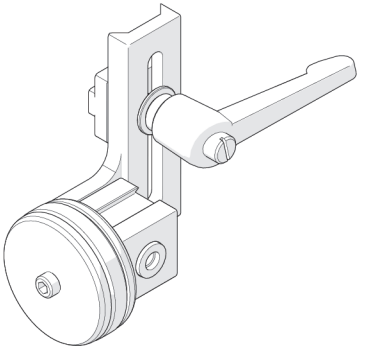


Figure 1-10 Stabilizer wheel

A stabilizer wheel supports cantilevered configurations (see Figure 1-10 on page 29).

1.4 Encoder Cable

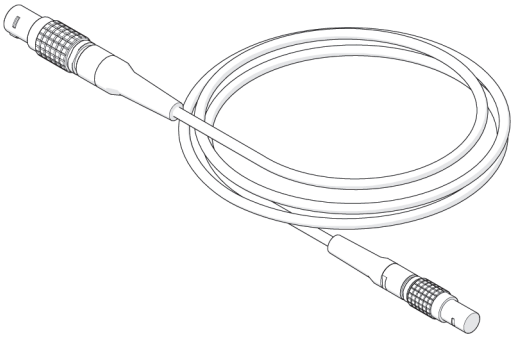


Figure 1-11 Encoder cable

The encoder cable connects the system to the your data acquisition instrument (see Figure 1-11 on page 29).

NOTE

Inspect the cable and connectors for damage before use. When damage is evident, the cable must not be used.

1.5 Cable Management, Dovetail Mount

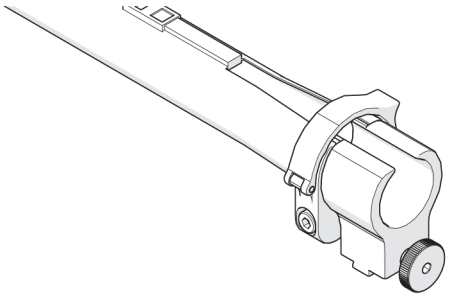


Figure 1-12 Cable management

Cable management provides a means of protecting and organizing cables, tubes, and hoses (see Figure 1-12 on page 30).

1.6 Irrigation Kit

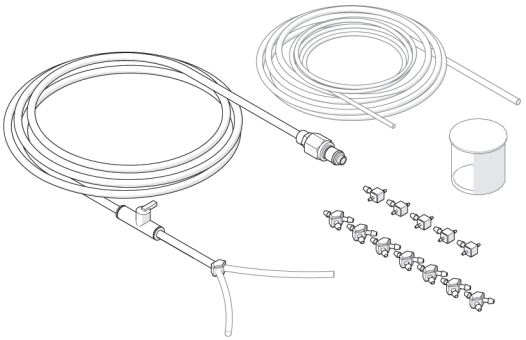


Figure 1-13 Irrigation kit

The irrigation kit provides a variety of hoses, fittings, connectors, and splitters commonly used during nondestructive inspection (see Figure 1-13 on page 31).

1.7 Tools

Several tools are included for various scanner and accessory adjustments. (see "Included Tools" on page 34).

1.8 Case

The system is provided with a rugged carrying case.

1.9 Compatible Components

1.9.1 Slider Probe Positioning System (Slider PPS)

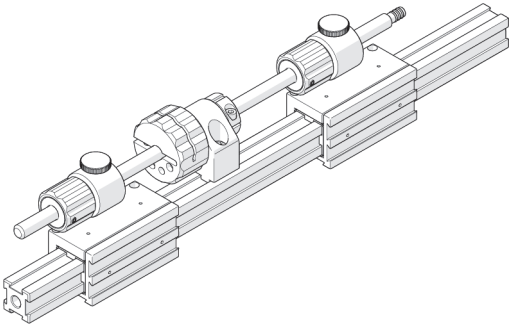


Figure 1-14 Slider PPS

The slider probe positioning system sets the probe center spacing and allows an operator to center the probes around a weld without removing the scanner (see Figure 1-14 on page 32).

1.9.2 Slider PPS Encoder

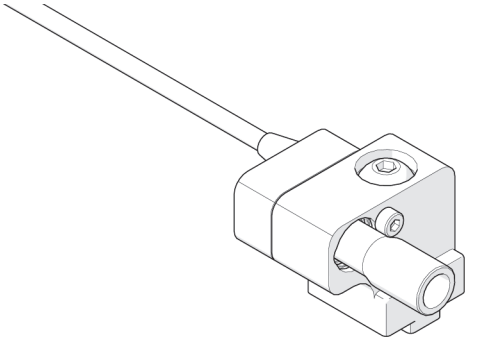


Figure 1-15 Slider PPS encoder

The slider PPS (probe positioning system) encoder attaches to the slider PPS to provide y-axis positional encoded feedback (see Figure 1-15 on page 32).

1.9.3 Crank Handle (Optional)

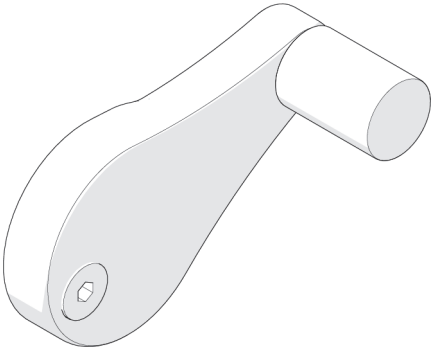


Figure 1-16 Crank handle

The crank handle mounts to a slider probe positioning system to enable quick and easy adjustment of the probe positioning (see Figure 1-16 on page 33).

1.9.4 Preamp Bracket

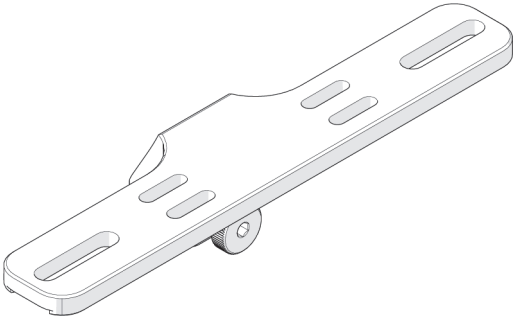


Figure 1-17 Preamp bracket

A bracket that mounts to a scanner to hold various preamps (see Figure 1-17 on page 33).

1.10 Included Tools

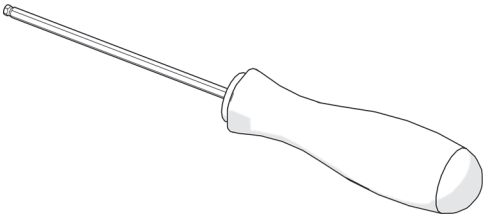


Figure 1-18 3 mm hex driver

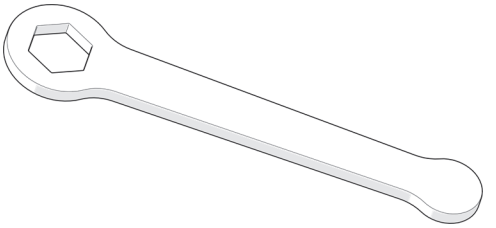


Figure 1-19 3/8 in. wrench

The 3 mm hex driver is sufficient for all typical operations and adjustments of the scanner (see Figure 1-18 on page 34).

The 3/8 inch wrench is used to remove and install buttons on the probe holders (see Figure 1-19 on page 34).

1.11 Optional Tools

Some specialized adjustments require tools that are not included in this kit.

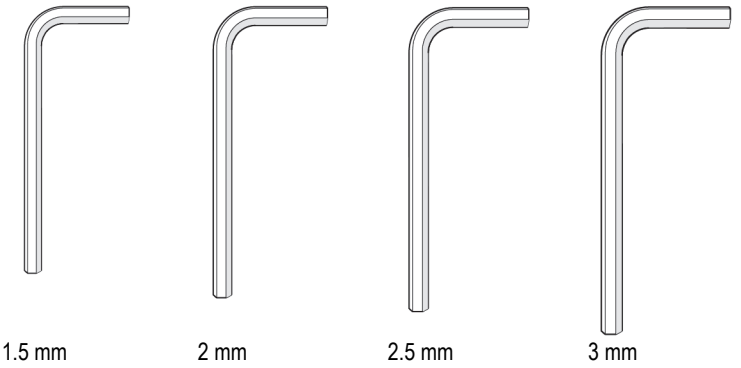


Figure 1-20 Hex wrench set

2. ChainSCANNER Setup and Connection

The ChainSCANNER is designed so that part changes and adjustments can be easily carried out. This chapter provides procedures for the main module, chain links, probe holders, y-axis, umbilical cable, and optional parts kits.

2.1 Setting Up and Adjusting the Cart

This section gives the procedures used to configure the ChainSCANNER system.

2.1.1 Cart Handle

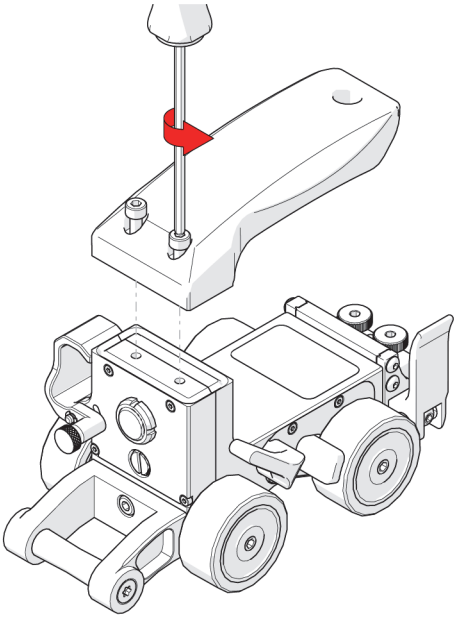


Figure 2-1 Cart handle removal

The handle provides an ergonomic grip during use. The cart handle may be removed to achieve a lower profile when required.

To remove the cart handle

- Use the supplied 3 mm hex driver (see Figure 2-1 on page 38).

2.1.2 Brake Handle

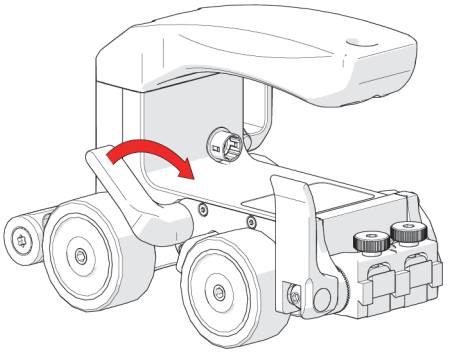


Figure 2-2 Brake handle

Pivot the red brake lever to engage the braking system. The brake is set when the lever snaps into place (see Figure 2-2 on page 39). Reversing this action will disengage the brakes.

2.1.3 Wheel Removal and Installation

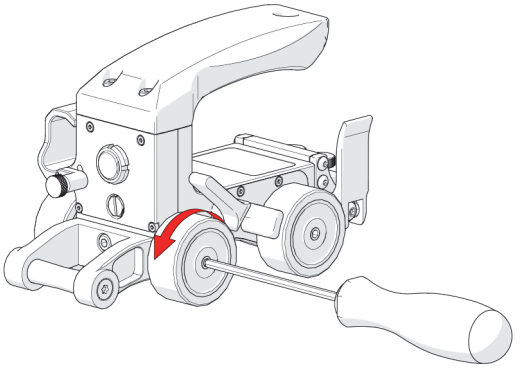


Figure 2-3 Wheel removal

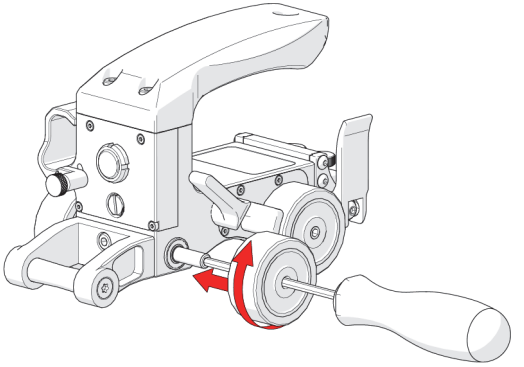


Figure 2-4 Wheel installation

Urethane wheels provide smooth rolling and are to be used with QuickLinks. The wheels of this system may be removed and are interchangeable.

To remove/install the wheels

1. Insert the provided 3 mm hex driver in the shaft of the wheel you wish to remove.
2. Thread or unthread the desired wheel with a hex driver while holding the wheel tight with the hand (see Figure 2-3 on page 39).
3. Reverse these steps to install wheels on the cart (see Figure 2-4 on page 40).

TIP

Ensure that all wheels are tightly installed as this can affect encoder performance.

2.1.4 Encoder Cable Connector

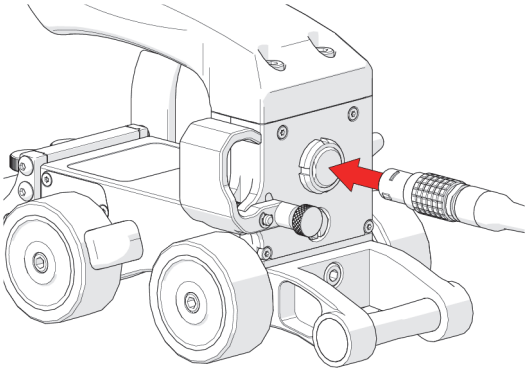


Figure 2-5 Encoder cable connector

The encoder cable connector transmits multiple encoder signals your data acquisition instrument (see Figure 2-5 on page 41).

NOTE

Inspect the cable and connectors for damage before use. When damage is evident, the cable must not be used.

2.1.5 Auxiliary Connector

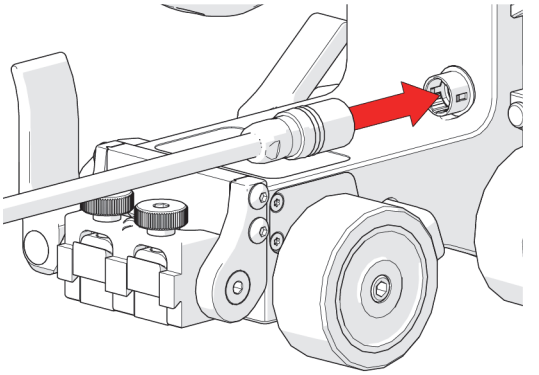


Figure 2-6 Auxiliary connector

The auxiliary connector is used for the PPS encoder. This encoder provides the position perpendicular to the travel direction of the cart. The auxiliary connector is found under the cart handle (see Figure 2-6 on page 42).

2.1.6 Pivot Nose

The pivot nose is an attachment point for frame bars.

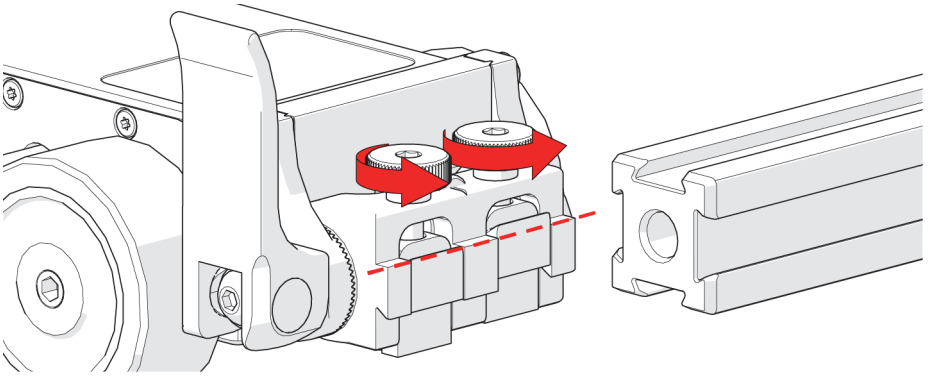


Figure 2-7 Loosen the dovetail

To Attach a frame bar

1. Loosen the dovetail jaws to align with the frame bar (see Figure 2-7 on page 42).

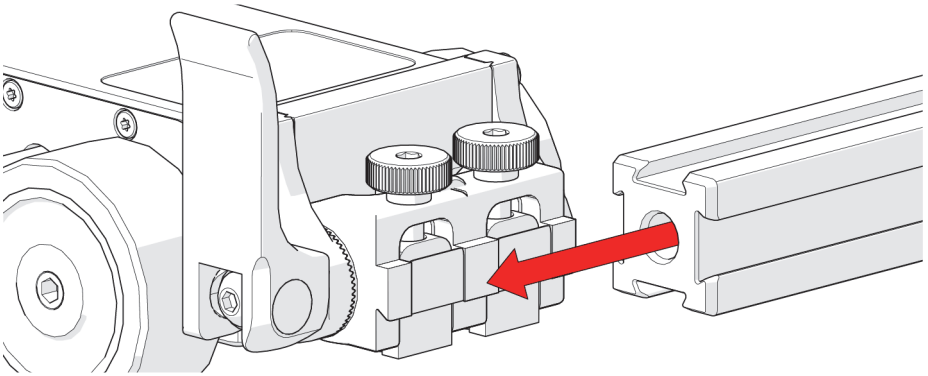


Figure 2-8 Attach the frame bar

2. Mount the frame bar on the dovetail jaw of the pivot mount and tighten the knobs (see Figure 2-8 on page 43). The angle of the frame bar should be adjusted to match the angle of the inspection surface.

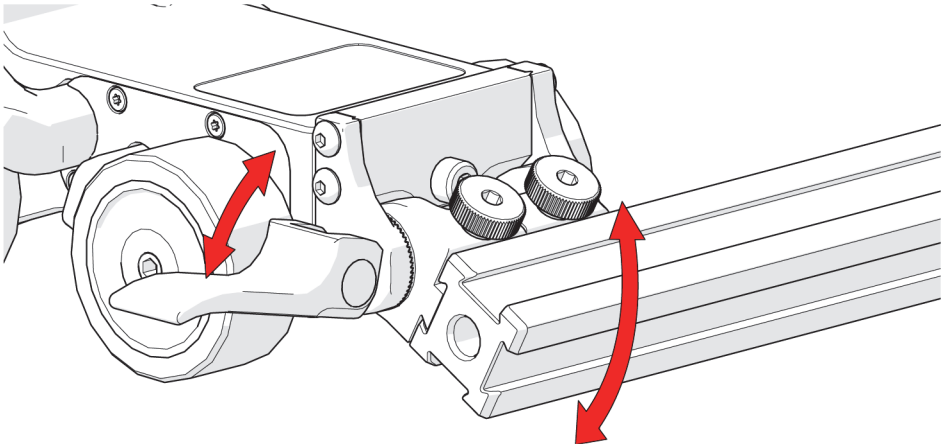


Figure 2-9 Adjusting the pivot angle

3. Loosen the side-mounted lever and pivot to the desired angle, then close the side-mounted lever to lock the frame bar in position (see Figure 2-9 on page 43).

2.1.7 Cable Management

A convenient clip is provided on the cart body to provide a method to organize and protect cables.

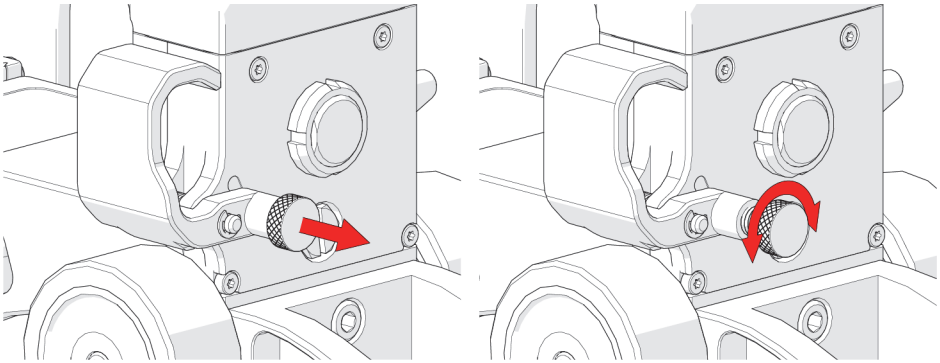


Figure 2-10 Pull and twist latch to open

To organize and protect cables

1. Pull the latch to open the cable management clip (see Figure 2-10 on page 44).
2. Twist the latch to prevent the latch from locking and to allow the clip to open freely (see Figure 2-10 on page 44).

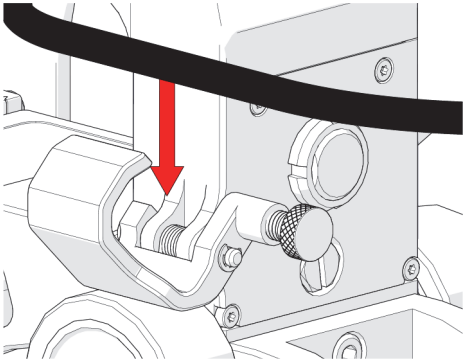


Figure 2-11 Open clip and place cables and hoses

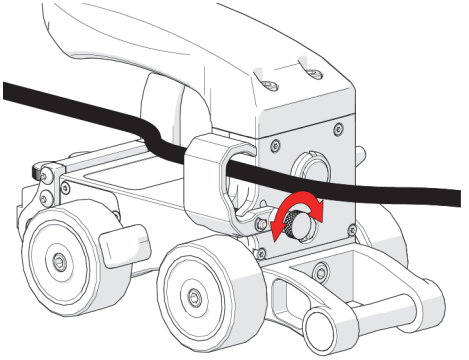


Figure 2-12 Close clip and twist latch to lock

3. Open the cable management clip and place cables and hoses in the clip as required (see Figure 2-11 on page 45).
4. Twist the latch to lock the cable management clip closed (see Figure 2-12 on page 45).

2.1.8 Anchor Point

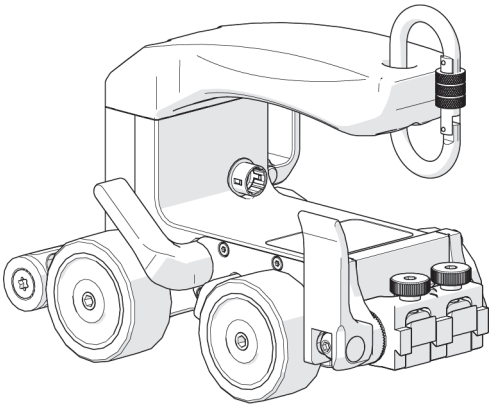


Figure 2-13 Anchor point

The slot in the handle can be used as an anchor point for various equipment (see Figure 2-13 on page 46).

NOTE

Carabiner not included.

2.1.9 QuickLink Tail

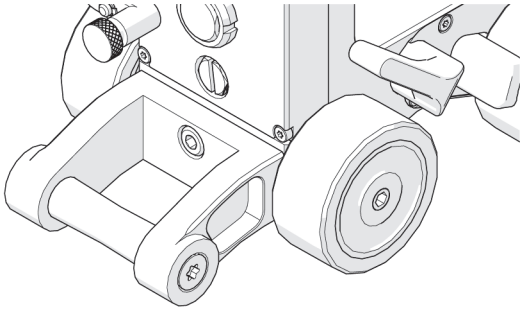


Figure 2-14 QuickLink tail

Located at the rear of the cart body. The QuickLink tail provides a connection point for QuickLinks (see Figure 2-14 on page 47).

Use the supplied 3 mm hex driver to install or remove the tail.

2.1.10 QuickLink Mounting Bracket

The QuickLink mounting bracket provides a connection for the QuickLinks.

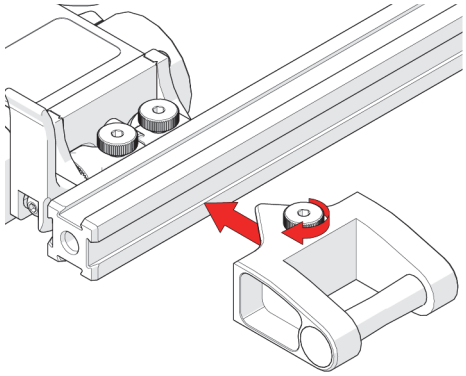


Figure 2-15 Installing the mounting bracket

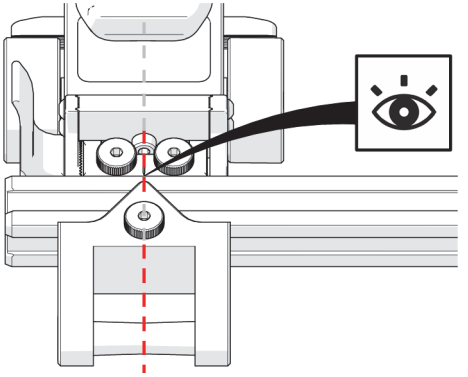


Figure 2-16 Align the mounting bracket

To secure the QuickLink mounting bracket to the frame bar

1. Tighten the knob (see Figure 2-16 on page 48).
2. Center the QuickLink mounting bracket to the center point marking on the cart's pivot mount (see Figure 2-16 on page 48).

2.2 Connecting QuickLinks and Dovetail Links

2.2.1 Connecting QuickLinks

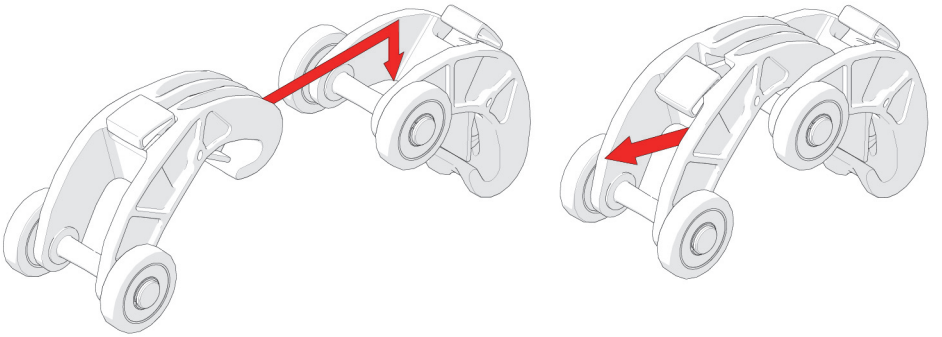


Figure 2-17 Connecting the QuickLinks

To connect QuickLinks

1. Lift the hook of the QuickLink over the axle of the QuickLink that is to be connected (see Figure 2-17 on page 48).
2. Pull the QuickLink until you hear a click that ensures the latch has been set (see Figure 2-17 on page 48).

2.2.2 Disconnecting the QuickLinks

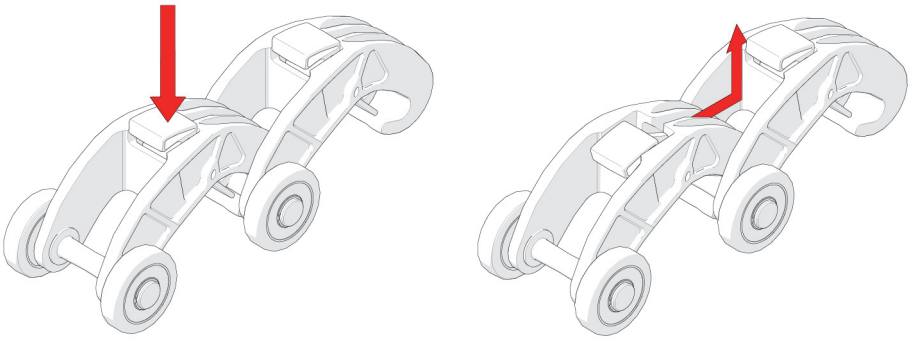


Figure 2-18 Disconnecting the QuickLinks

To disconnect the QuickLinks

1. Press the button on the top of the QuickLink (see Figure 2-18 on page 49).
2. While pressing the button, slide the QuickLink forward and up, clearing the hook of the QuickLink from the second QuickLink's axle (see Figure 2-18 on page 49).

2.2.3 Disconnecting the Dovetail QuickLink

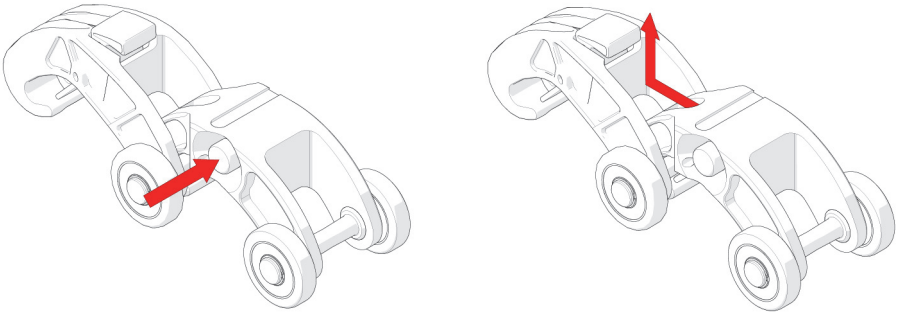


Figure 2-19 Disconnecting a dovetail QuickLink

To disconnect dovetail QuickLinks

1. Press the button on the side of the dovetail QuickLink (see Figure 2-19 on page 50).
2. While pressing the red button, slide the dovetail QuickLink forward and up, clearing the hook of the dovetail QuickLink from the second QuickLink's axle (see Figure 2-19 on page 50).

2.3 Stabilizer Wheel

The stabilizer wheel is used to balance the frame bar and to keep the frame bar parallel to the inspection surface.

WARNING

MAGNETIC MATERIAL. The stabilizer wheel uses a magnetic wheel. People with pacemakers or ICD's must stay at least 25 cm (10 in) away.

2.3.1 Installing a Stabilizer Wheel

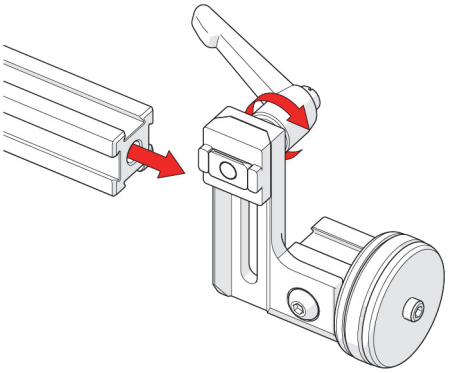


Figure 2-20 Attach to the frame bar

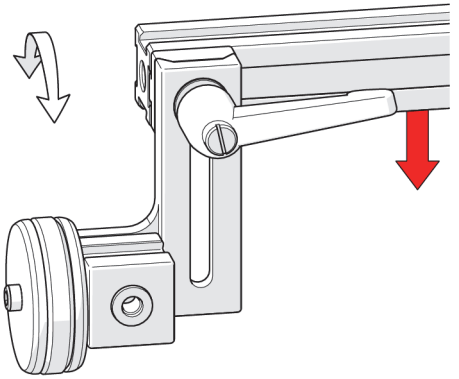


Figure 2-21 Position frame bar horizontally

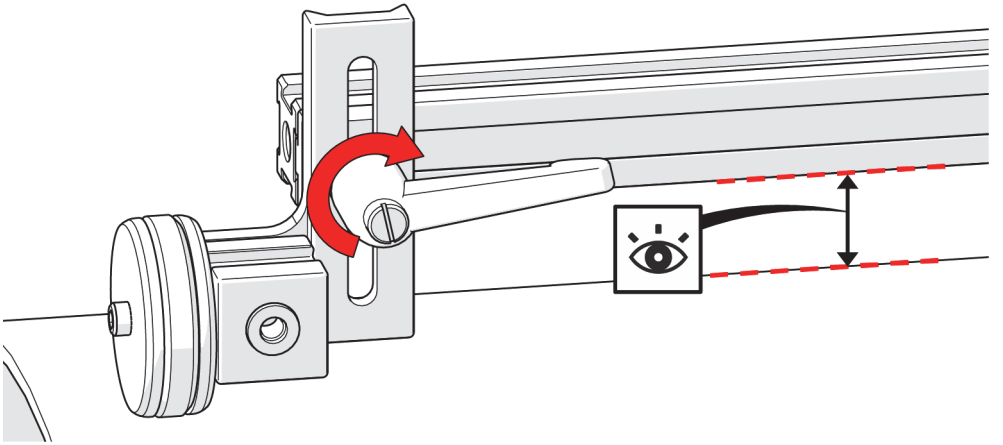


Figure 2-22 Tighten lever when frame bar is parallel with inspection surface

To install the stabilizer wheel

1. Using the black ratchet lever, ensure the dovetail nut is loose (see Figure 2-20 on page 51).
2. Slide the dovetail nut onto the frame bar (see Figure 2-20 on page 51).
3. Adjust the height of the stabilizer wheel's frame bar mount to ensure the frame bar is parallel with the inspection surface (see Figure 2-21 on page 51 and Figure 2-22 on page 52).
4. Tighten the black ratchet lever (see Figure 2-22 on page 52).

TIP

If the ratchet lever contacts the inspection surface, the position of the ratchet lever can be adjusted by pulling the lever out and rotating it to a new position.

2.4 Ratchet Lever Locking Position Adjustment

Ratchet levers are used for various locking functions on the ChainSCANNER system. Occasionally, changing the lever locking position is required (see Figure 2-23 on page 53).

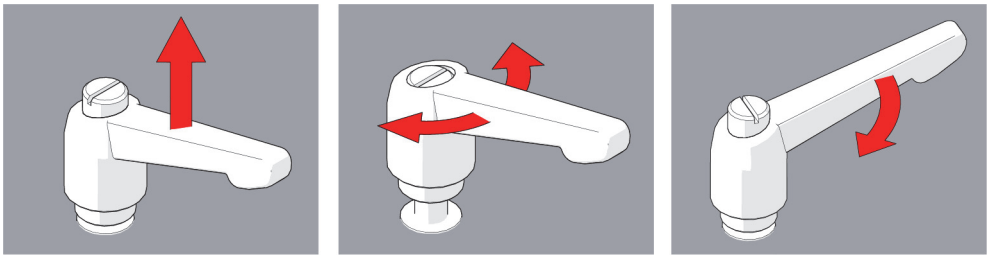


Figure 2-23 Ratchet lever locking position adjustment

To adjust the ratchet lever

1. Pull the ratchet lever away from the base to which it is connected (see Figure 2-23 on page 53).
2. Continue to pull while rotating the lever in the appropriate direction.
3. Release the lever and utilize the new tightening position.

2.5 Slip Joint Probe Holder

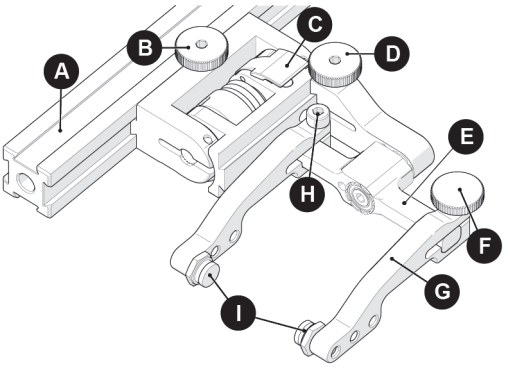


Figure 2-24 Slip joint probe holder

Table 1 Slip joint probe holder components

A	Frame bar
B	Probe holder adjustment knob
C	Latch
D	Swing arm knob
E	Yoke
F	Probe holder arm adjustment knob
G	Probe holder arm
H	Arm clamp screw
I	Pivot buttons

2.5.1 Probe Holder Setup

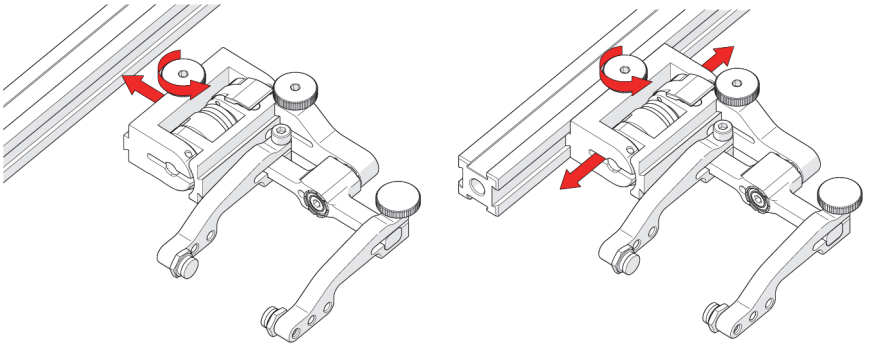


Figure 2-25 Mounting and adjusting a probe holder on the frame bar

To mount a UT wedge in the probe holder

1. Rotate the probe holder adjustment knob, and attach the probe holder to a frame bar (see Figure 2-25 on page 55).
2. Use the probe holder adjustment knob to position the probe holder along the frame bar (see Figure 2-25 on page 55).

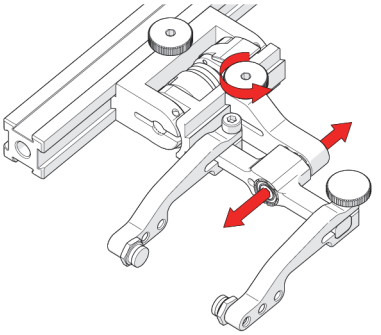


Figure 2-26 Swing arm adjustment

3. Use the swing arm knob to position the swing arm (see Figure 2-26 on page 55).

TIP

The swing arm is typically used to adjust TOFD center-to-center distance relative to the phased array probes on a four probe configuration (see Figure 2-26 on page 55).

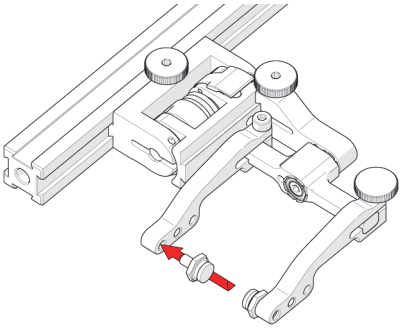


Figure 2-27 Install pivot buttons

4. Using the supplied 3/8 inch wrench (see Figure 1-19 on page 34), place the pivot buttons as required (see Figure 2-27 on page 56).

TIP

If a narrow scanning footprint is required, use the pivot button holes closest to the yoke. Wedge pivoting may be impeded when closer to the yoke.

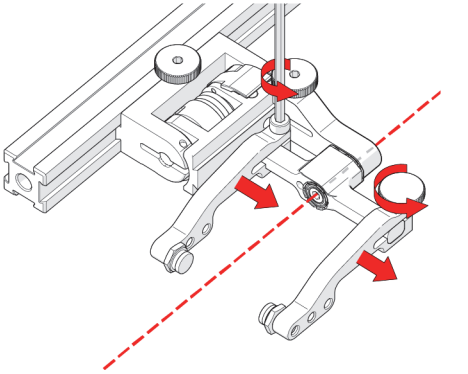


Figure 2-28 Adjust probe holder arms

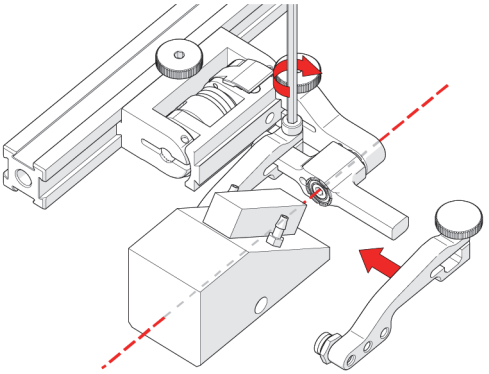


Figure 2-29 Place wedge

5. Loosen the arm clamp screw and the probe holder arm adjustment knob (see Figure 2-28 on page 57), and remove the outer probe holder arm from the yoke.
6. Adjust the inner probe holder arm as required to best center the probe on the yoke's pivot axis (see Figure 2-29 on page 57).

TIP

The probe holder yoke can accommodate many different probe and wedge sizes of varying widths. It is best to center the wedge with the yoke's pivot axis to reduce wedge tipping when scanning. Position the inner probe holder arm accordingly with the center of the yoke (see Figure 2-28 on page 57).

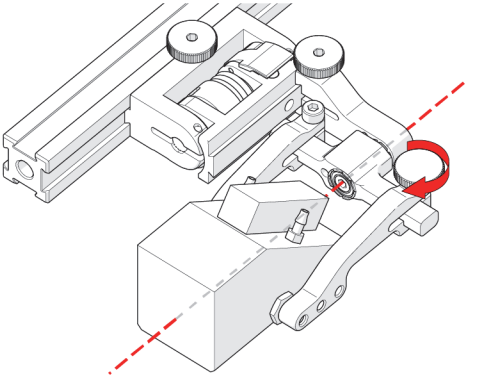


Figure 2-30 Pinch wedge with arm

7. Position the wedge on the inner probe holder arm (see Figure 2-29 on page 57).
8. Tighten the arm clamp screw (see Figure 2-29 on page 57).
9. Slide the outer probe holder arm along the yoke pinching the wedge in place.
10. Tighten the probe holder arm adjustment knob (see Figure 2-30 on page 58).

2.5.2 Probe Holder Adjustment

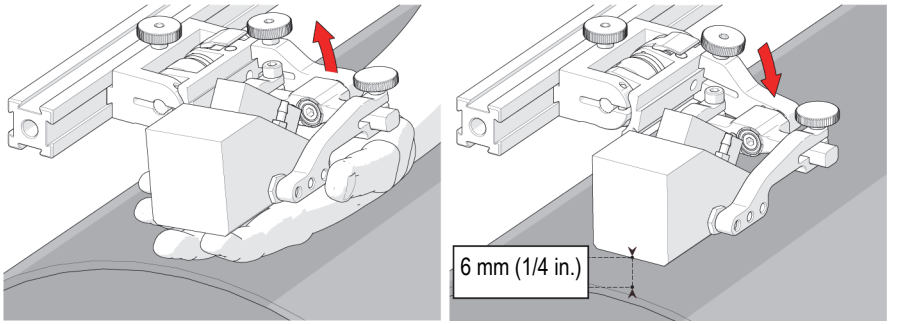


Figure 2-31 Lift up to latch and lower on scanning surface

To adjust the probe holder

1. Ensure the probe holder is in latched, upper position (see Figure 2-31 on page 59). If the probe holder is already latched, it will only move within the slip joint adjustment range and have no spring tension.
2. Push the probe holder yoke down toward the inspection surface until the wedge is approximately 6 mm (¼ in.) above the inspection surface (see Figure 2-31 on page 59).

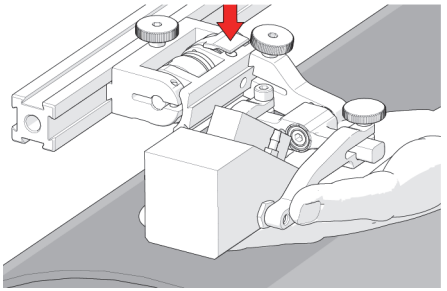


Figure 2-32 Lift and press latch

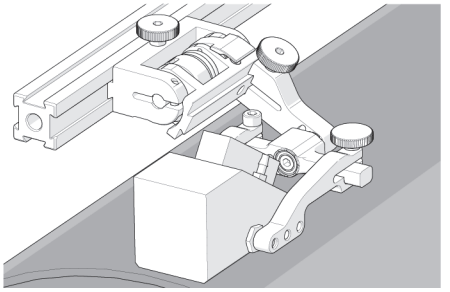


Figure 2-33 Gently lower probe

3. Lift the probe slightly and press the latch button (see Figure 2-32 on page 59) to apply spring pressure to the wedge.
4. Gently lower the probe holder and wedge to the scanning surface (see Figure 2-33 on page 60).

2.5.3 Probe Holder Force Adjustment

It is possible to adjust the tension of the probe holder spring. When configured correctly, these settings exert the force indicated in Table 2 on page 60.

NOTE

The 2 mm hex wrench and 3 mm hex wrench are required to perform this operation (see Figure 1-20 on page 35).

Table 2 Probe holder spring tension

Light	1 kg	2 lb
Medium	2 kg	4 lb
Heavy	3 kg	6 lb

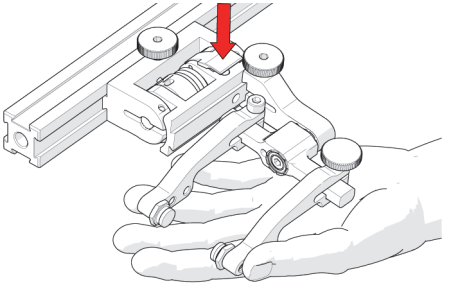


Figure 2-34 Lift probe and latch

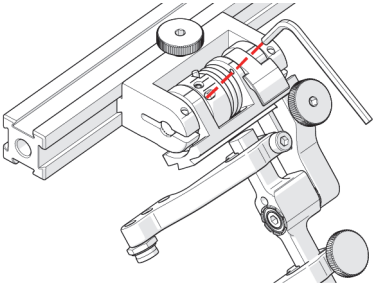


Figure 2-35 Unlatched position

To adjust the probe holder's force

1. Ensure the probe holder is in the upright latched position (see Figure 2-34 on page 61).
2. Lift the probe holder slightly, and press the latch button (see Figure 2-35 on page 61) to release the probe holder the full 45° degrees.
3. Insert the short arm of a 3 mm hex wrench into the 3 mm slot (see Figure 2-35 on page 61)

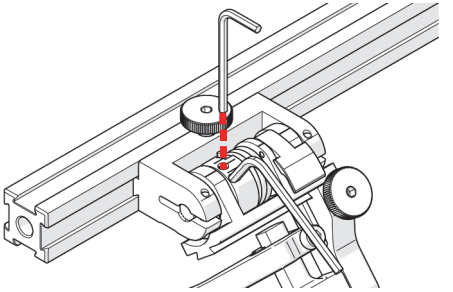


Figure 2-36 Insert hex wrenches

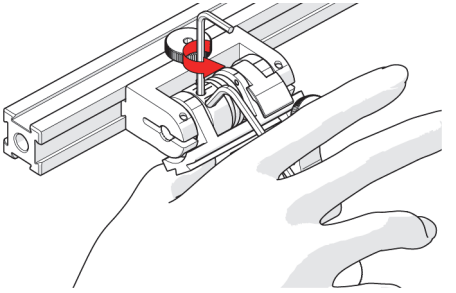


Figure 2-37 Press 3mm hex wrench down

4. Place the 2 mm hex wrench into the force adjustment screw (see Figure 2-36 on page 62).
5. Lightly press the long arm of the 3 mm hex wrench down. Using the 2 mm hex wrench, loosen the force adjustment screw but do not remove it (see Figure 2-37 on page 62).

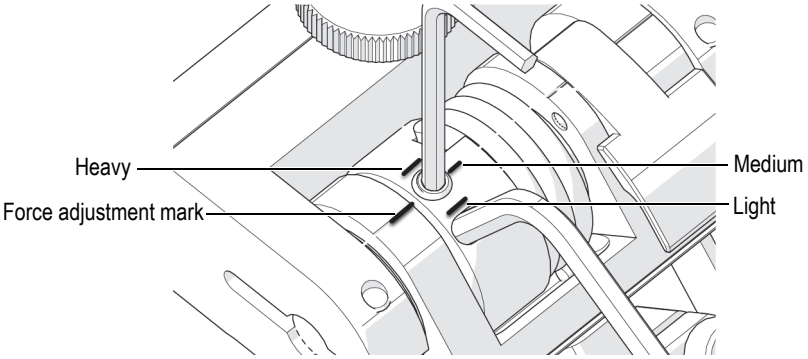


Figure 2-38 Marker lines adjust to the desired tension

6. Gently apply pressure on the long leg of the 3 mm hex wrench until the force adjustment marker lines up with the desired spring tension. While keeping the markers in line, tighten the force adjustment screw (see Figure 2-38 on page 63).

NOTE

Do not perform this operation on a scanning surface.

2.5.4 Slip Joint Probe Holder Left/Right Conversion

You can reverse the probe holder orientation.

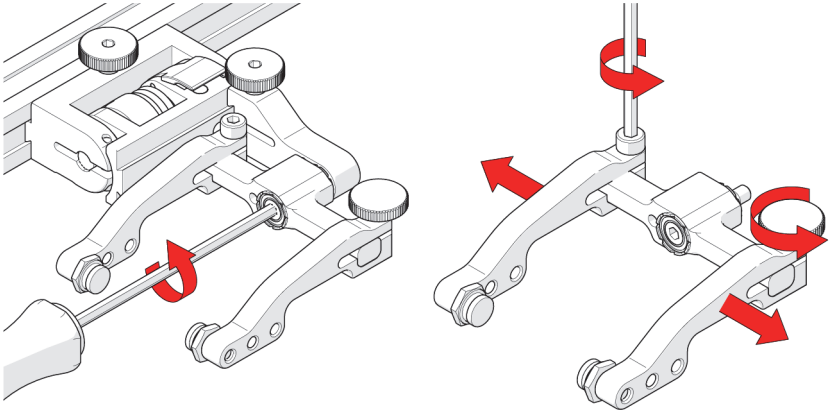


Figure 2-39 Unscrew pivot screw and remove arms

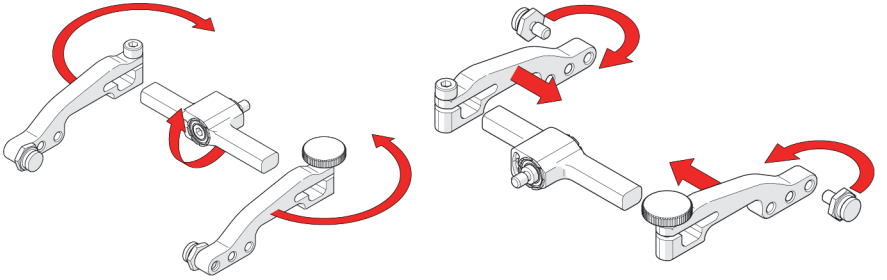


Figure 2-40 Flip yoke, reverse arms, move buttons inside

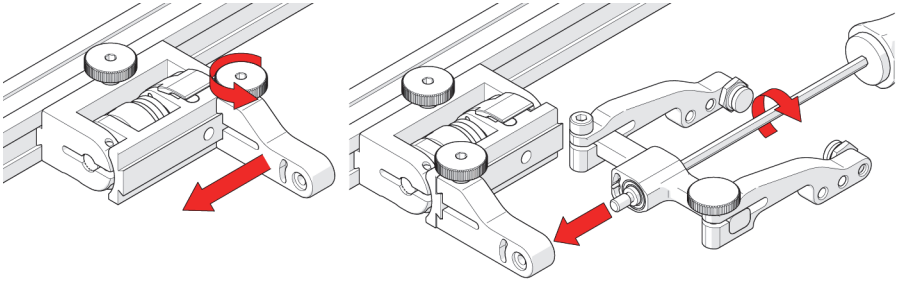


Figure 2-41 Position swing arm, and install yoke to swing arm

To reverse the probe holder, follow these steps:

1. Unscrew the yoke from the swing arm (see Figure 2-39 on page 64).
2. Loosen the probe holder arm adjustment knob and arm clamp screw. Slide the arms from the yoke (see Figure 2-39 on page 64).
3. Flip the yoke 180°, and reverse the probe holder arms (see Figure 2-40 on page 64).
4. Place the pivot buttons on the inside of the probe holder arms using a 3/8 inch wrench (see Figure 2-40 on page 64 and see Figure 1-19 on page 34).
5. Slide the arms onto the yoke and tighten the probe holder arm adjustment knob and the arm clamp screw.
6. Loosen the swing arm knob, and slide the swing arm to the opposite end of the probe holder bracket (see Figure 2-41 on page 64) or the preferred position. Tighten the swing arm knob.
7. Using the 3 mm hex driver, screw the yoke pivot screw into the opposite side of the probe holder swing arm (see Figure 2-41 on page 64). Ensure the yoke is level to avoid issues with the plunger/set screw.

2.5.5 Pivot Buttons

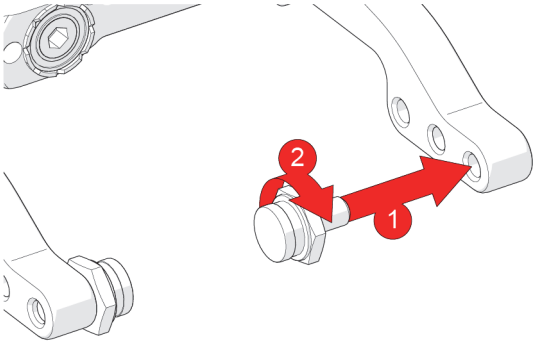


Figure 2-42 Pivot buttons

Pivot buttons are available in a variety of shapes and sizes, fitting various wedge dimensions.

Use the supplied 3/8 inch wrench (see Figure 1-19 on page 34) to remove and install pivot buttons in desired hole location (see Figure 2-42 on page 65).

2.6 Cable Management System

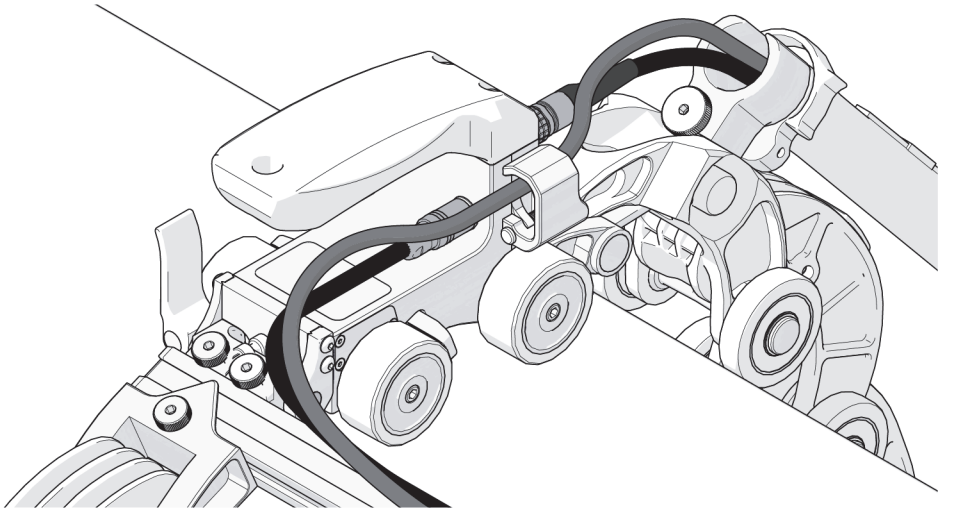


Figure 2-43 Cable management

The cable management provides a means of bundling and protecting cables and hoses that connect to the scanner.

2.6.1 Cable Management Dovetail Mount

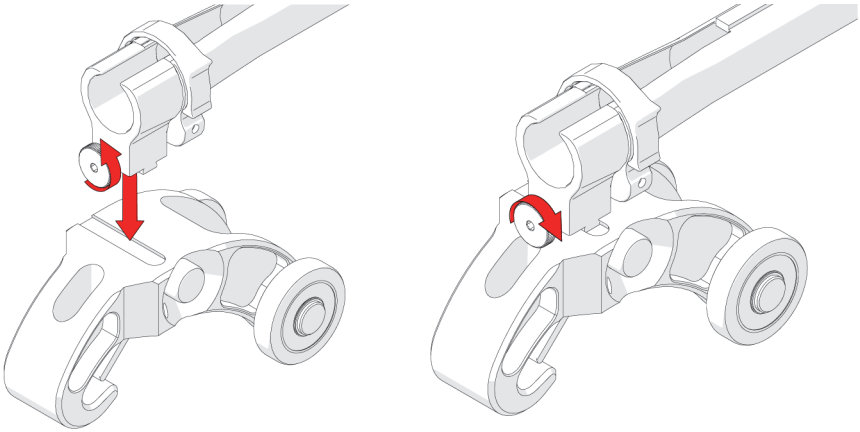


Figure 2-44 Loosen, slide on, and tighten

To attach cable management

1. Loosen the knob on the cable management dovetail mount. Position the mount onto the dovetail QuickLink (see Figure 2-44 on page 67).
2. Center the cable management dovetail mount on the dovetail QuickLink, and then tighten its knob (see Figure 2-44 on page 67).

2.6.2 Cable Management Setup

Cable management is available in a variety of lengths and provides a means of bundling and protecting cables and hoses that run to a scanner.

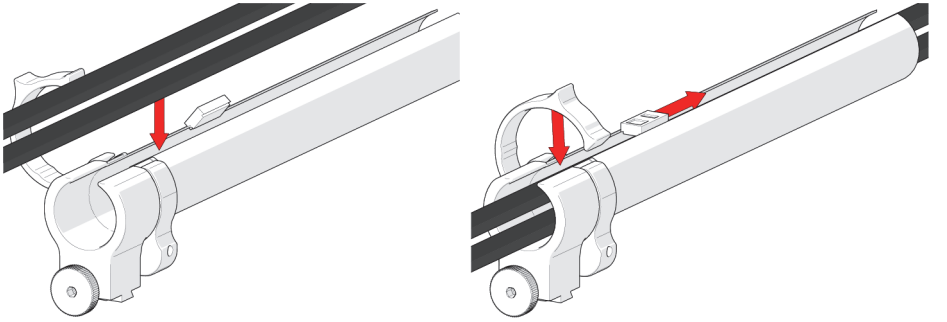


Figure 2-45 Insert cables and zip up to close

To manage the cables

1. Open the zipper of the cable management. Begin at the tube's dovetail mount and place the cables in the tube (see Figure 2-45 on page 68).
2. As you place the cable in the tube, zip the tube closed (see Figure 2-45 on page 68).

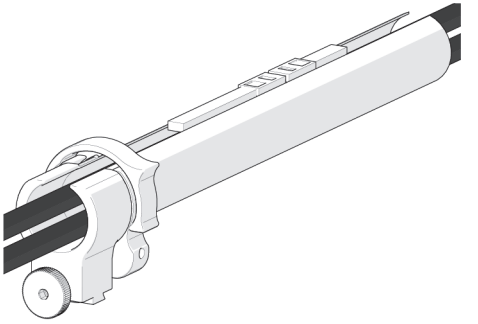


Figure 2-46 Zip opposite end

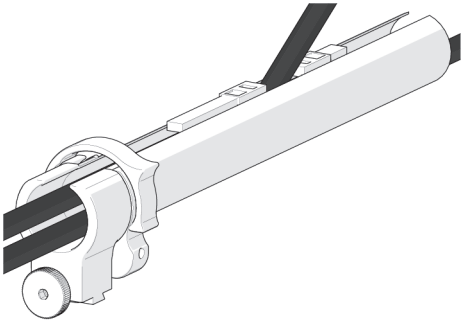


Figure 2-47 Cable exiting the tube

3. When the cable is placed in the entire length of the tube, bring the zipper from the tube's opposite end, meeting at any point in the middle (see Figure 2-46 on page 68).
4. When necessary, the two zippers may be opened to allow cables to exit the tube anywhere between the ends (see Figure 2-47 on page 69).

2.6.3 Clamp Setup

The tube may become disconnected from the cable management dovetail mount.

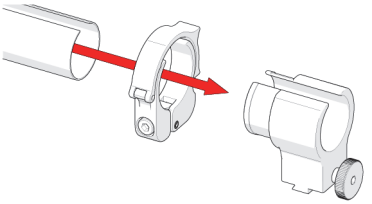


Figure 2-48 Join tube and clamp

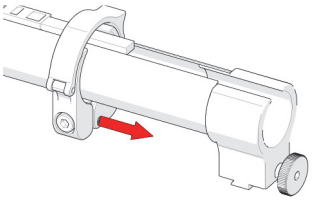


Figure 2-49 Slide clamp onto mount

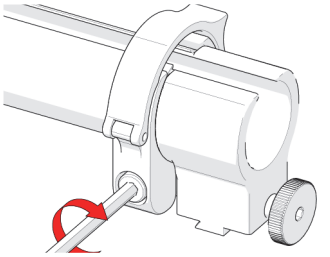


Figure 2-50 Tighten clamp screw

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, and then slide the tube around the outside of the cable management dovetail mount (see Figure 2-48 on page 69). Align the zipper opening and the cable management dovetail mount opening.
3. Slide the clamp over the tube and cable management dovetail mount, pinching the tube in between (see Figure 2-49 on page 70).
4. Tighten the clamp screw (see Figure 2-50 on page 70).

2.7 Magnetic Wheel Kit

WARNING

MAGNETIC MATERIAL. The magnetic wheel kit produces a magnetic field that may cause failure or permanent damage to items such as watches, memory devices, CRT monitors, medical devices or other electronics. People with pacemakers or ICDs must stay at least 25 cm (10 in.) away.

CAUTION

The magnetic wheels may lose their magnetic properties if heated above 175°F (80°C).

When a chain-link scanner is not appropriate, you can replace the non-magnetic wheels by optional magnetic wheels.

To install or remove the wheels, see “Wheel Removal and Installation” on page 39.

Optionally, two magnetic wheel kits can also be used on the cart body to double the magnetic force (see Figure 2-51 on page 71).

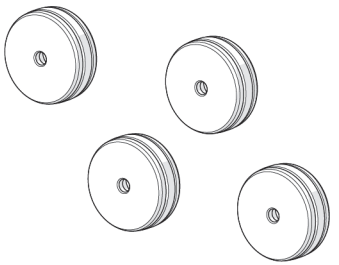


Figure 2-51 Magnetic wheels

NOTE

Do not use magnetic wheels with a QuickLink chain-link assembly.

2.8 Slider Probe Positioning System

The slider probe positioning system uses a slide and leadscrew system to position one or two probes for weld inspection. This system can set the probe center spacing and enables you to center the two probes over the weld without removing the scanner. To operate a slider PPS, see “Slider Probe Positioning System (Slider PPS)” on page 32.

2.8.1 Slider PPS Assembly

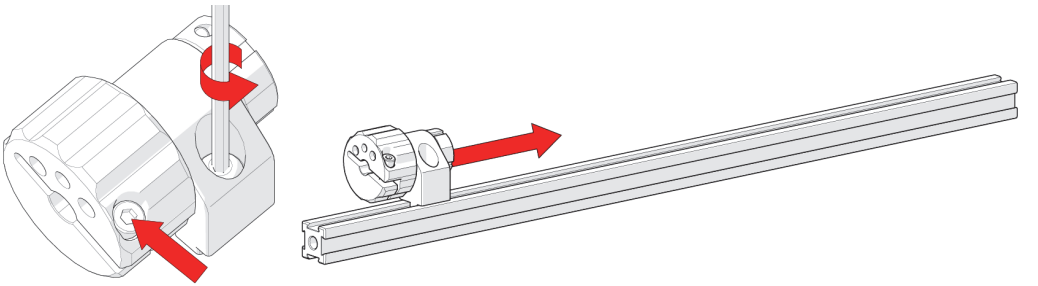


Figure 2-52 Slider PPS assembly

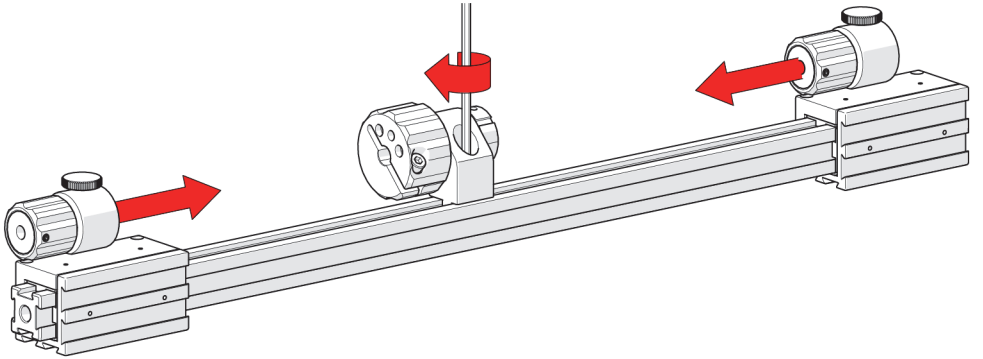


Figure 2-53 PPS sliders

To assemble a slider probe positioning system

1. Ensure the lock screw and the hexagonal screw in the main knob are loose (see Figure 2-52 on page 72).
2. Slide the main knob to the middle of the frame bar (see Figure 2-52 on page 72).
3. Tighten the lock screw on the main knob bracket (see Figure 2-53 on page 73). Ease the two sliders onto either end of the frame bar and push the sliders to the desired position on the frame bar (see Figure 2-53 on page 73). The slider's friction fit requires an appropriate level of force to position the slider.

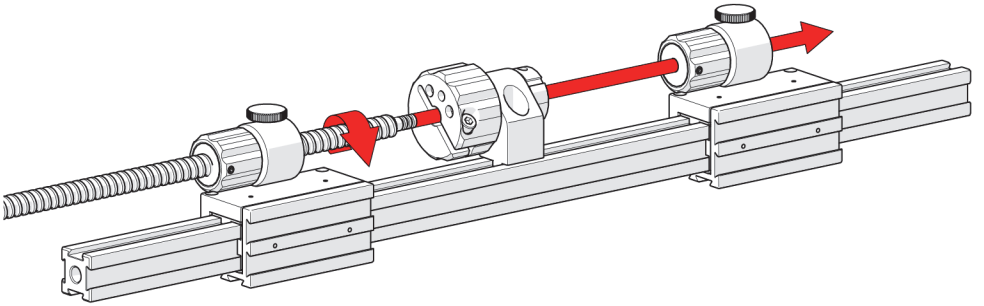


Figure 2-54 Installing the leadscrew

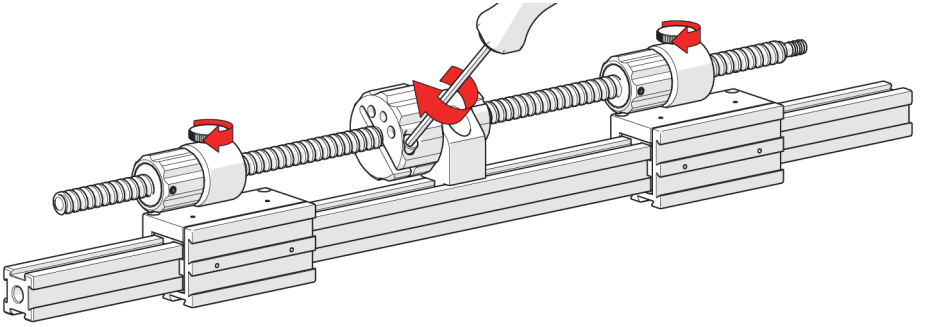


Figure 2-55 Tighten leadscrew

4. Screw the leadscrew into the first slider, then the main knob and finally the second slider assembly (see Figure 2-54 on page 73).

NOTE

The leadscrew's encoder end must be positioned on the same side as the cart.

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5. Tighten the main knob's hexagonal screw (see Figure 2-55 on page 74).

2.8.2 Slider Index Encoding

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

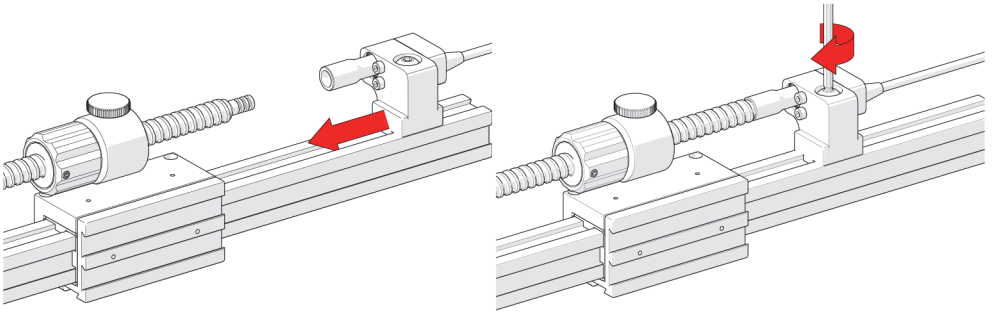

Figure 2-56 Index encoder

Follow these steps for installation:

1. Ensure the encoder's lock screw is loose.
2. Slide the encoder's dovetail nut onto the frame bar (see Figure 2-56 on page 74), and continue sliding the encoder towards the leadscrew until the leadscrew and the encoder's coupling are attached (see Figure 2-56 on page 74).
3. Tighten the encoder's lock screw (see Figure 2-56 on page 74.

TIP

Leave space for the pivot nose and QuickLink mounting bracket when placing the encoder on the frame bar. If necessary, repeat the slider PPS installation (see "Slider PPS Assembly" on page 72) sequence and position the system with space for the QuickLink mounting bracket.

2.9 Crank Handle (Optional)

The crank handle is used in conjunction with a single probe with slider PPS setup (Figure 1-14 on page 32). The optional crank handle provides faster probe positioning and greater ease of use.

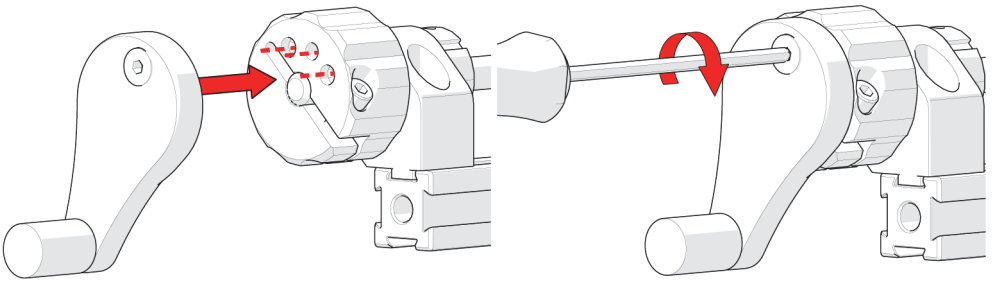

Figure 2-57 Crank handle installation

To install the crank handle

1. Align the dowels of the crank handle with the holes of the main knob (see Figure 2-57 on page 75).

2. Using the supplied 3 mm hex driver, tighten the hexagonal screw (see Figure 2-57 on page 75).

2.10 Preamp Bracket (Optional)

Use screws or the optional hook and loop straps to attach a preamp to the preamp bracket. The preamp bracket is compatible with most standard preamps.

Intended Use

Any object (e.g. preamps, splitters, etc.) mounted to the preamp bracket must meet the following criteria:

- Weigh a maximum of 1.36 kg (3 lb)
- Is attached to the frame with a lanyard or probe cables strong enough to prevent the object from falling
- Have smooth edges so as not to cut the bracket's attachment strap

2.10.1 Mounting the Preamp Bracket

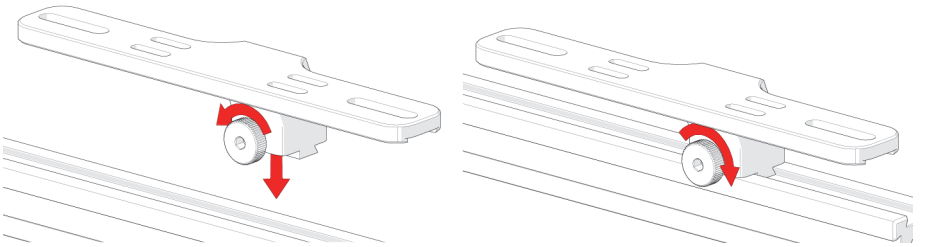

Figure 2-58 Preamp bracket

To mount the preamp bracket

1. Loosen the knob and align the dovetail nut with the dovetail groove (see Figure 2-58 on page 76).
2. Tighten the knob to lock the preamp bracket in place (see Figure 2-58 on page 76).

2.10.2 Attaching the Preamp with Screws

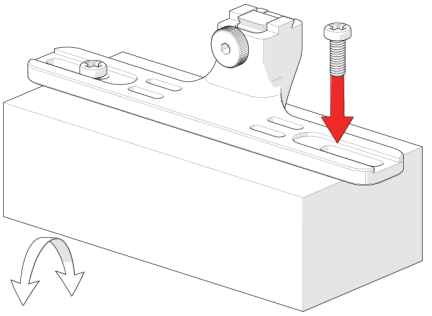

Figure 2-59 Attach preamp with screws

Use the adjustable screw mounting channel on the bottom of the bracket to attach a preamp (screws not included).

2.10.3 Attaching the Preamp with Hook and Loop Straps

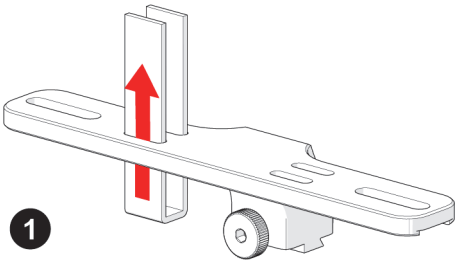

Figure 2-60 Insert straps

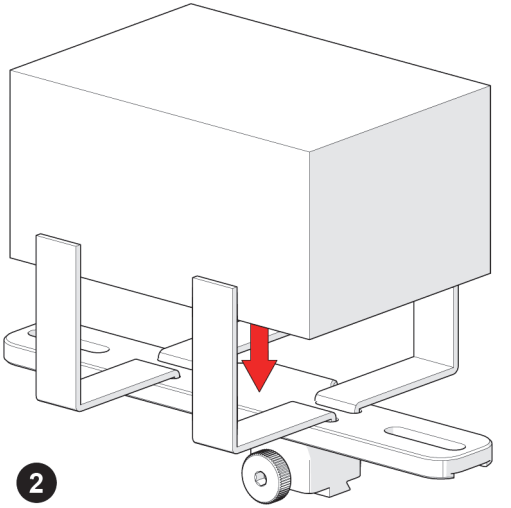

Figure 2-61 Place preamp

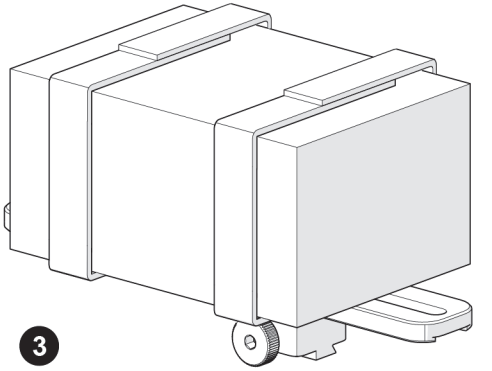

Figure 2-62 Attach straps

To attach the preamp to the bracket using straps

1. Slide the strap through the bracket's holes (see Figure 2-60 on page 77).
2. Center and place the preamp on the bracket wrapping the strap around the preamp (see Figure 2-61 on page 78.

3. Secure the preamp to the bracket by attaching each side of the hook and loop straps (see Figure 2-62 on page 78).

3. Operation

3.1 Setting Up the Scanner on a Scanning Surface

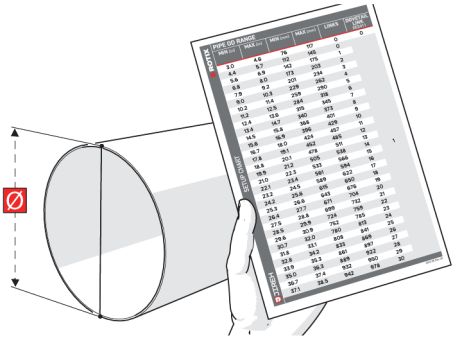

Figure 3-1 Refer to setup chart

To set up the ChainSCANNER on a scanning surface

1. Determine the diameter of the pipe or tube to be scanned. Consult the setup chart indicating the number of links required based on the pipe or tubing diameter (see Figure 3-1 on page 81).

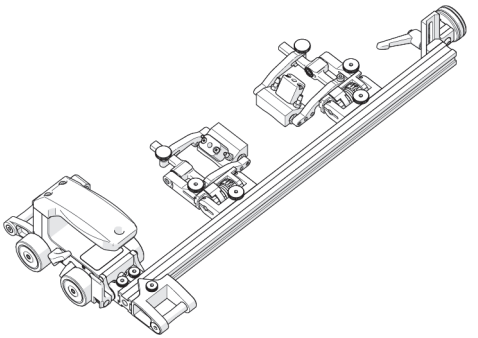

Figure 3-2 Assemble configuration

2. Assemble the appropriate configuration to the cart body (see Figure 3-2 on page 82). Install the wedge and probes that will be used (see "Slip Joint Probe Holder" on page 54).

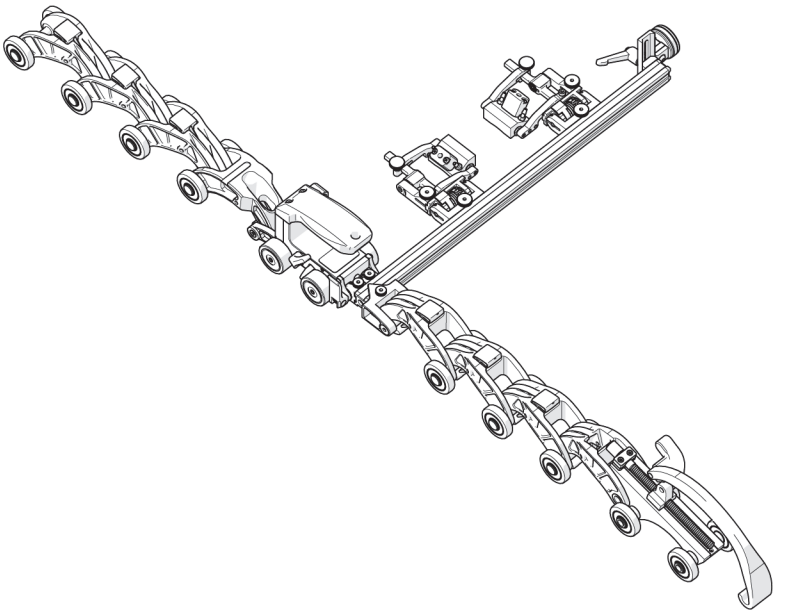

Figure 3-3 Assemble links on a flat surface

3. On a flat surface, connect the appropriate amount of QuickLinks as indicated on the ChainSCANNER setup chart. Arrange the configuration so the QuickLink buckle will be 180° opposite the cart body (see Figure 3-3 on page 82).

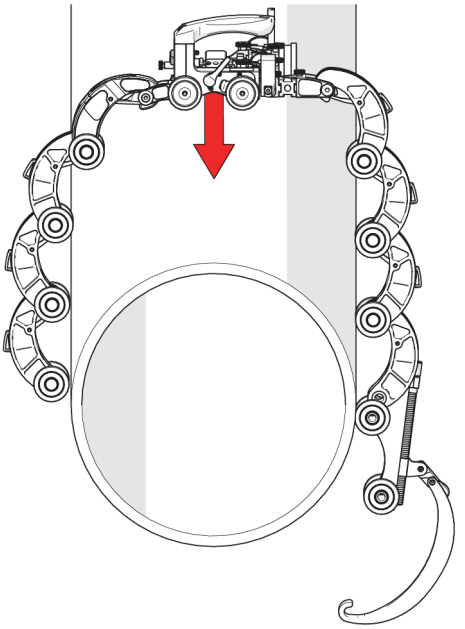

Figure 3-4 Drape onto pipe

TIP

Place the dovetail QuickLink directly behind the cart body to mount cable management.

4. Ensure the cart's brake is locked (see"Brake Handle" on page 39).
5. Drape the configured assembly around the pipe that will be inspected (see Figure 3-4 on page 83).

TIP

Use caution when placing the assembly on the scan surface. The magnetized stabilizer wheel can lurch toward the metal suddenly.

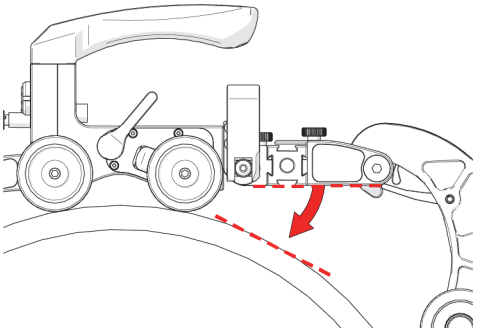

Figure 3-5 Drop pivot nose

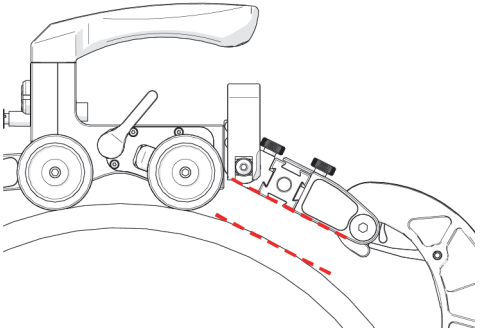

Figure 3-6 Adjust parallel with scan surface tangent

6. Adjust the pivot nose angle to align the frame bar parallel with the tangent of the scan surface (see Figure 3-5 on page 84 and Figure 3-6 on page 84).

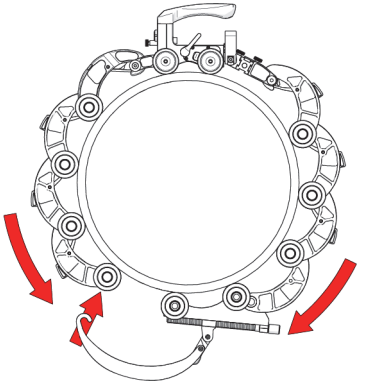

Figure 3-7 Hook QuickLink buckle to QuickLink

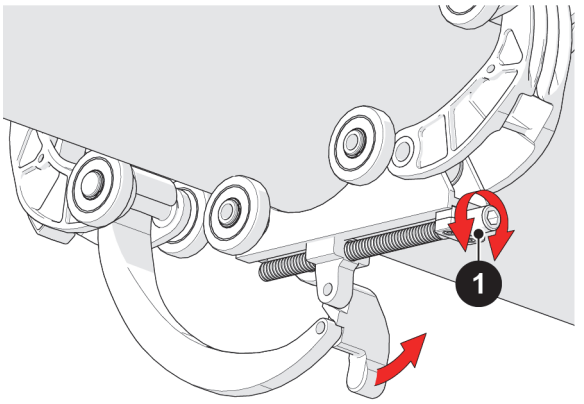

Figure 3-8 Adjust pressure of QuickLink buckle

7. Bring the QuickLink buckle's arm towards the opposite QuickLink. Hook the QuickLink buckle's arm to the middle axle of the QuickLink (see Figure 3-7 on page 85). The QuickLink buckle adjustment knob may have to be loosened to allow the arm to reach the QuickLink (see Figure 3-8 on page 85).

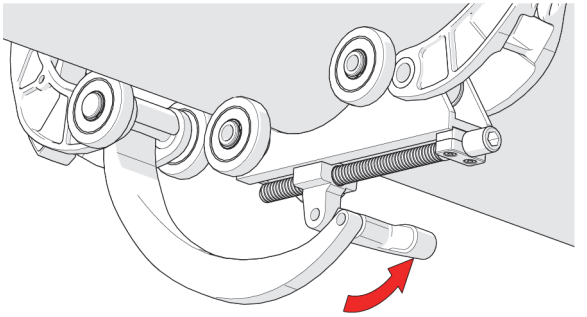

Figure 3-9 Press down to lock

8. Rotate the knob until the QuickLink buckle's lever can be pushed down, to lock the QuickLink buckle in place (see Figure 3-8 on page 85). You can adjust tightness of the ChainSCANNER on the pipe using the QuickLink buckle adjustment knob (see Figure 3-9 on page 86).

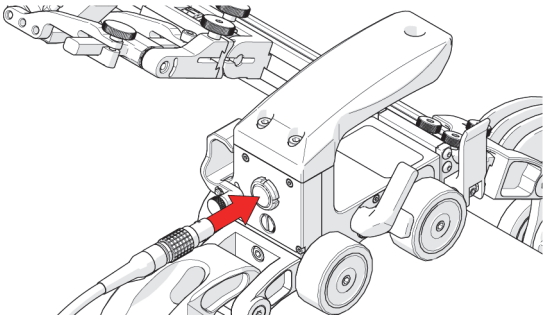

Figure 3-10 Connect encoder cable

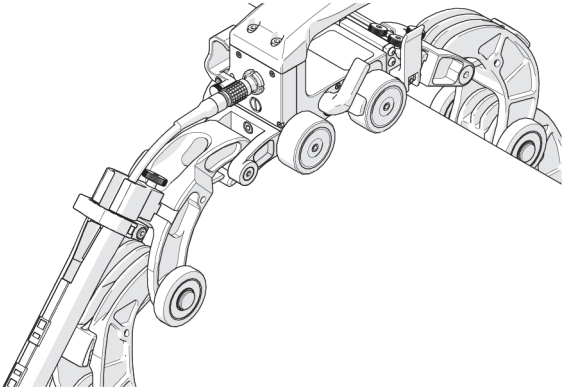

Figure 3-11 Attach cable management

9. Connect the encoder cable to the cart (see Figure 3-10 on page 86).
10. Attach the cable management and route cables as required (see Figure 3-11 on page 87 and “Cable Management System” on page 66).

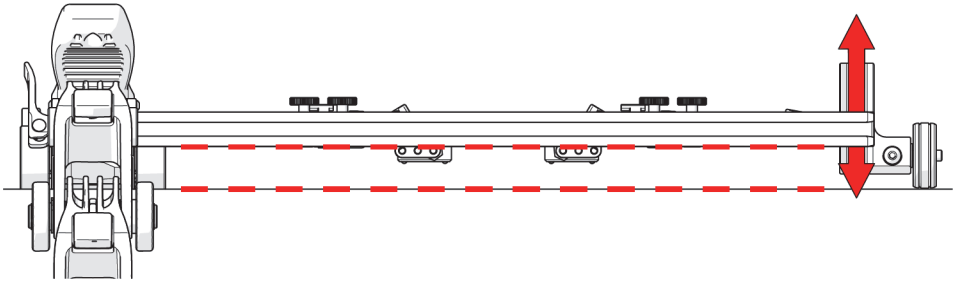

Figure 3-12 Adjust stabilizer wheel

11. Adjust the stabilizer wheel to align the frame bar parallel with the scan surface (see Figure 3-12 on page 87 and “Stabilizer Wheel” on page 29).

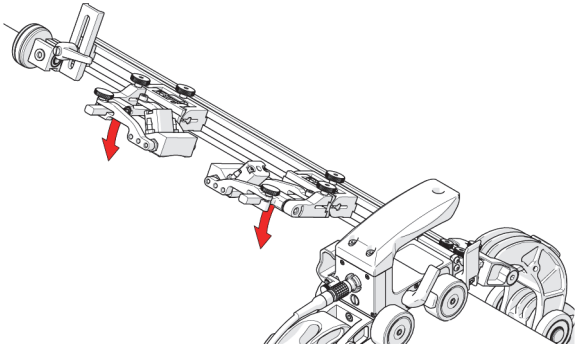

Figure 3-13 Lower probe holders

12. Lower the probe holders to the scan surface (see Figure 3-13 on page 88 and "Probe Holder Adjustment" on page 59).

3.2 Using a Slider Probe Positioning System (Slider PPS)

The slider probe positioning system uses a slide and leadscrew system to position one or two probes for weld inspection.

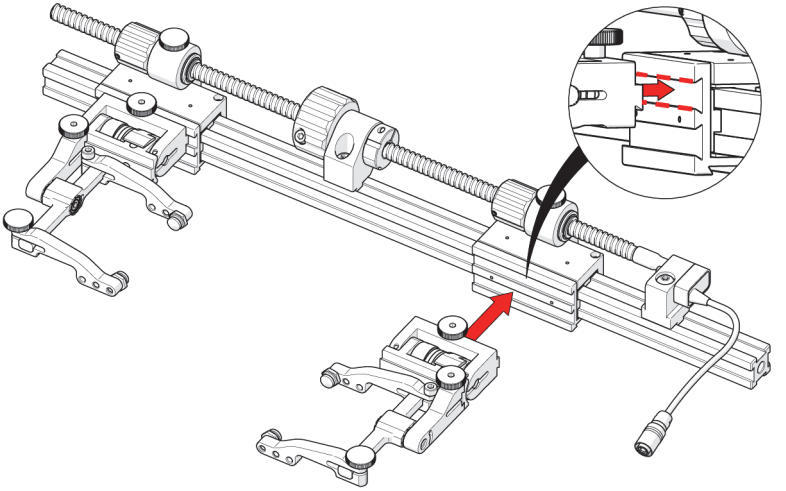

Figure 3-14 Mount probe holders

To setup and install a slider probe positioning system

1. Attach the probe holders to the top groove on the mounting bracket of the slider (see Figure 3-14 on page 88 and “Slip Joint Probe Holder” on page 54).

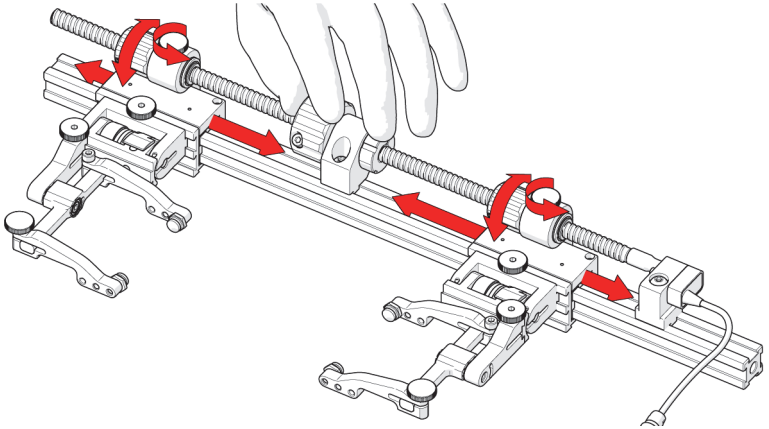

Figure 3-15 Individual slider positioning

2. Loosen the knob at the top of the slider. Rotate the small knobs allowing individual placement of the sliders. The main knob must be held firm when rotating the small knobs to achieve the correct movement (see Figure 3-15 on page 89).

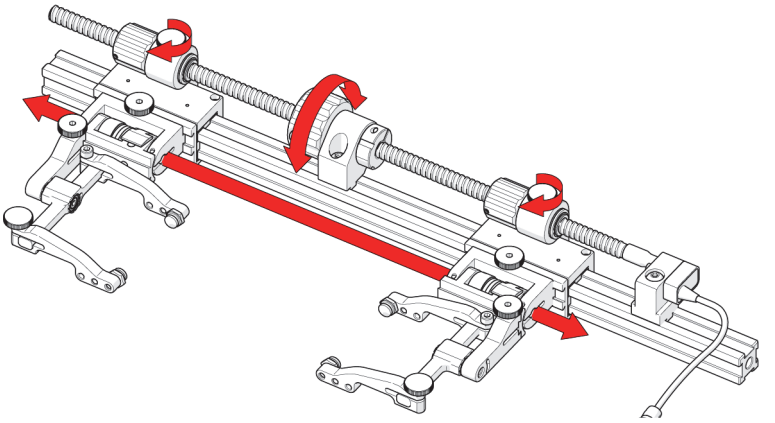

Figure 3-16 Simultaneous slider positioning

3. Ensure the slider knobs are tight and rotate the main knob to position both sliders simultaneously (see Figure 3-16 on page 90).

4. Maintenance

General cleaning of the system components is important to keep your scanner 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.

5. Troubleshooting

Table 3 Troubleshooting guide

Problem	Possible cause	Solution
The QuickLink chain is too loose/tight	Incorrect number of QuickLinks for proper scanner configuration.	Refer to the sizung chart (see "ChainSCANNER Sizing Charts" on page 109) for the required number of QuickLinks for the diameter of the pipe/tube to be scanned. Ensure the correct outer diameter measurement of the pipe/tube. Reset the scanner with the correct number of QuickLinks.
	The QuickLink buckle is incorrectly setup.	Adjust the tightness of the QuickLink buckle (see Figure 3-8 on page 85).
Insufficient probe contact.	The scanner is not set correctly.	Reconfigure the scanner as per instructions (see "Setting Up the Scanner on a Scanning Surface" on page 81).

6. Spare Parts and Optional Kits

The ChainSCANNER system features numerous parts, components, and accessories. Individual spare parts and parts kits are listed in tables.

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 affect the safety of the product.

6.1 Cart

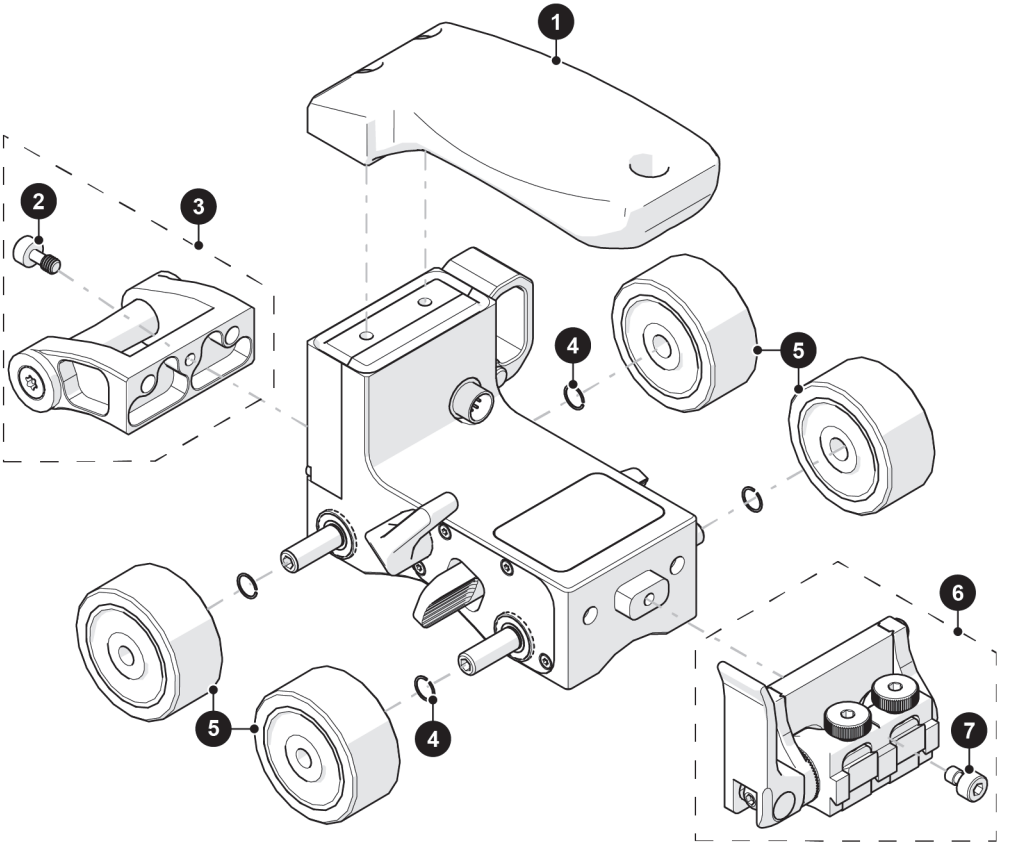

Figure 6-1 Cart spare

Table 4 Cart spare parts

BOM ID	Part #	Description
1	Q8302800	Handle
2	Q8302801	Cover bolt, M4x8
3	Q8302802	QuickLink tail

Table 4 Cart spare parts *(continued)*

BOM ID	Part #	Description
4	Q8302803	Axle retaining ring, 6 mm
5	U8775189	Non-magnetic wheel
6	Q8302804	Front pivot
7	Q8302805	Cover bolt, M4x6

6.2 ChainSCANNER parts

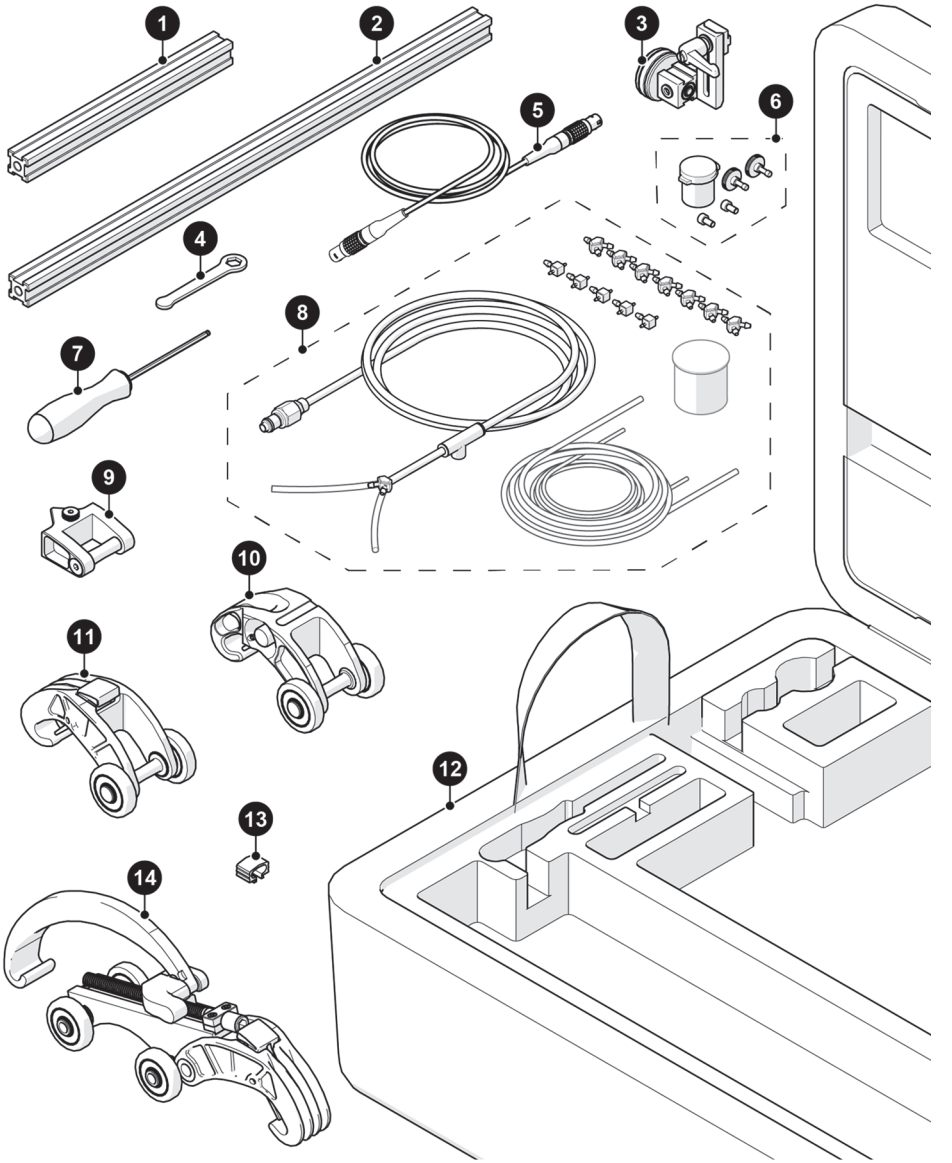

Figure 6-2 ChainSCANNER parts

Table 5 ChainSCANNER parts

BOM	ID Part #	Description
1	Q8301399	Frame bar, 20 cm (7.9 in.)
2	U8830732	Frame bar, 45 cm (17.7 in.)
3	Q7500181	Stabilizer wheel (see stabilizer wheel)
4	Q8301359	10 mm (3/8 in.) wrench
5	Q8300608	Encoder cable
6	Q8302806	2 probe spare parts kit
7	Q8300559	Hex driver, 3 mm
8	Q8302807	Irrigation kit, 2-4 probe
9	Q8302808	QuickLink mounting bracket
10	Q8302809	Dovetail QuickLink
11	Q8302810	QuickLink
12	Q8302811	Case
13	Q8302668	Cable clip
14	Q8302812	QuickLink buckle

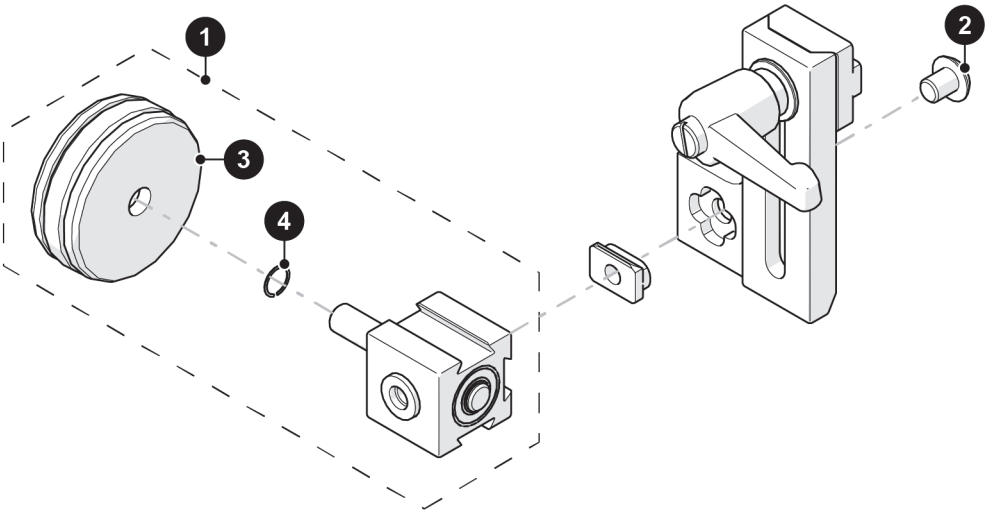

Figure 6-3 Stabilizer wheel

Table 6 Stabilizer wheel

BOM ID	Part #	Description
1	Q7500008	Magnetic wheel block
2	Q8302813	BHCS, M5x0.8 x 6mm, SST
3	U8779383	Magnetic wheel
4	Q8302803	Axle retaining ring - 6mm

6.3 Slider Probe Positioning System (Slider PPS)

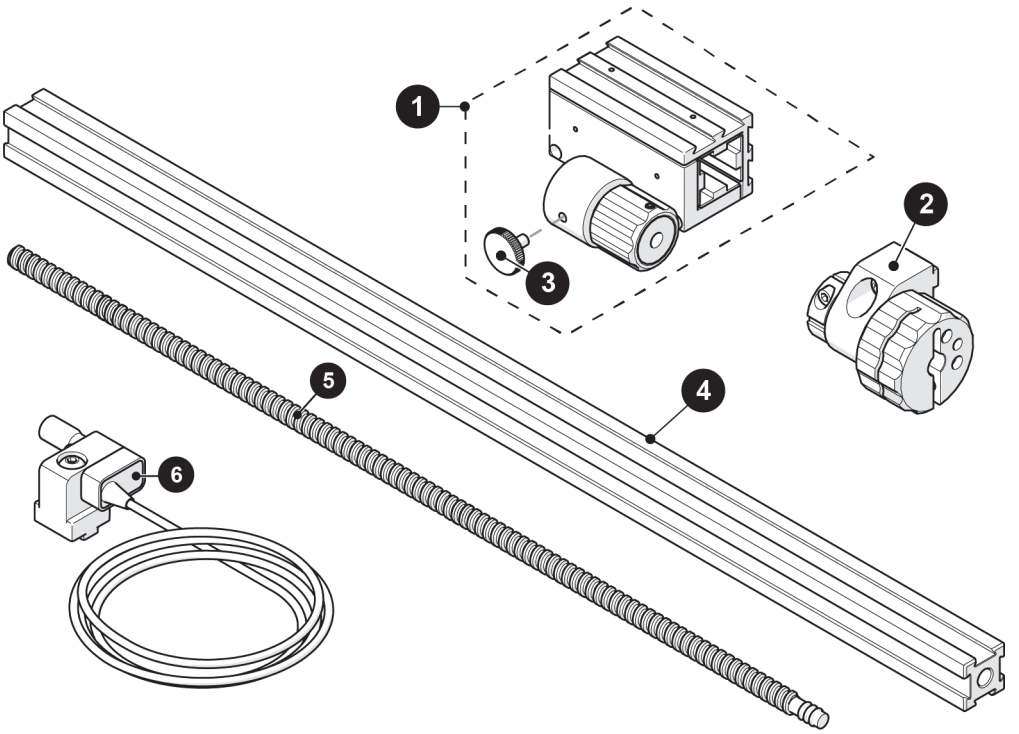

Figure 6-4 Slider PPS parts

Table 7 Slider PPS parts

BOM ID	Part #	Description
1	U8909359	Slider PPS Slider
2	U8775206	Slider PPS Main Knob
3	Q8302814	Knurled knob, M4 x 0.7 x 8 mm, SST
4	Q8301399	Frame bar, 20 cm (7.9 in.)
	Q8300575	Frame bar 35 cm (13.8 in.)
	U8830732	Frame bar, 45 cm (17.7 in.)
	U8775161	Frame bar 55 cm (21.7 in)

Table 7 Slider PPS parts *(continued)*

BOM ID	Part #	Description
5	U8775146	Leadscrew
6	U8775145	Slider PPS encoder

6.4 Slip Joint Probe Holder Parts

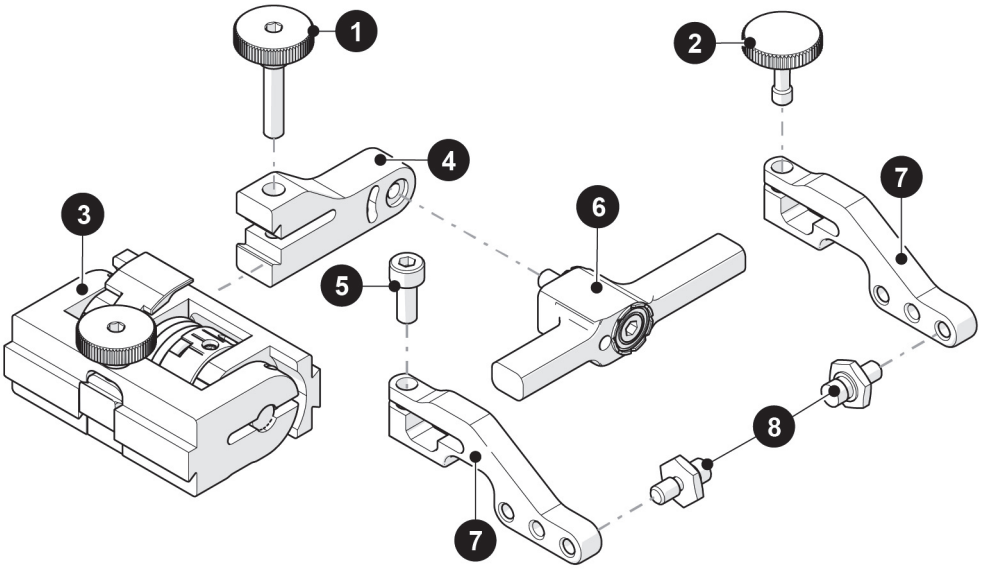

Figure 6-5 Slip joint probe holder parts

Table 8 Slip joint probe holder parts

BOM ID	Part #	Description
1	Q8302815	Knurled knob, M4 x 0.7 x 18 mm, 4 mm stand off, SST
2	Q7750010	Knurled knob, M4 x 0.7 x 10 mm, 3 mm stand off, SST
3	Q1501375	Slip joint probe holder subassembly
4	Q8302821	Swing arm short style

Table 8 Slip joint probe holder parts *(continued)*

BOM ID	Part #	Description
4	Q8302822	Swing arm long style
5	Q8300568	SHCS, M4 x 0.7 x 10 mm, SST
6	Q8302837	Probe holder yoke wide size
7	Q7750009	Probe holder arm short flat
	Q8300577	Probe holder arm standard flat
	Q8301477	Probe holder arm short drop
	Q8301669	Probe holder arm standard drop
	Q8300578	Probe holder arm long flat
8	U8775198 U8775199	Pivot button 8 mm diameter style Pivot button 5 mm diameter style

6.5 Cable management

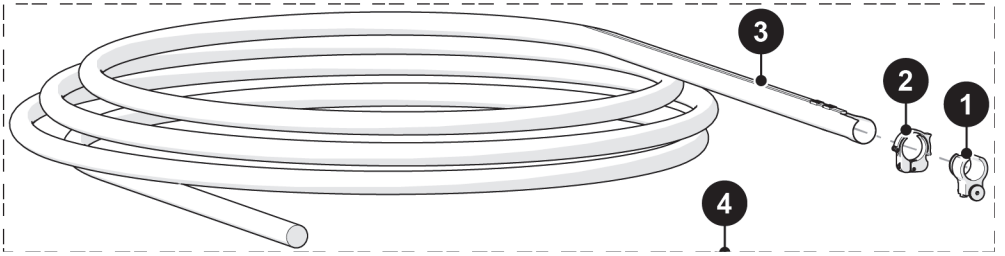

Figure 6-6 Cable management parts

Table 9 Cable management parts

BOM ID	Part #	Description
1	Q8302816	Cable management mount, dovetail mount
2	Q8300554	Cable management clamp, dovetail mount
3	Q7750093	Cable management sleeving, 7 m (23 ft)
4	Q8302817	Cable management: dovetail (see cable management sleeving)

6.6 Preamp Bracket

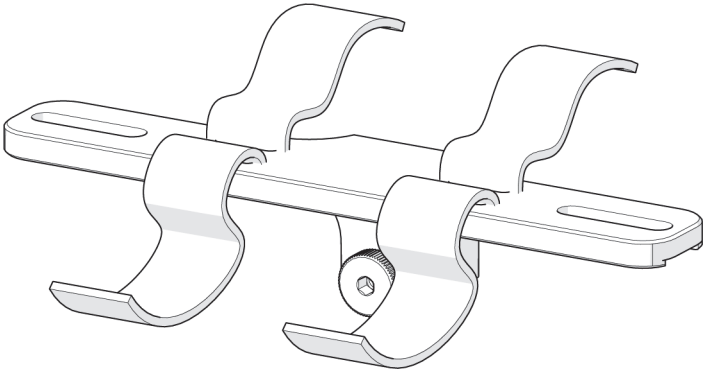

Figure 6-7 Preamp bracket

Table 10 Preamp bracket

Part #	Description
Q7201260	Preamp bracket with hook and loop attachment

6.7 Magnetic Wheel

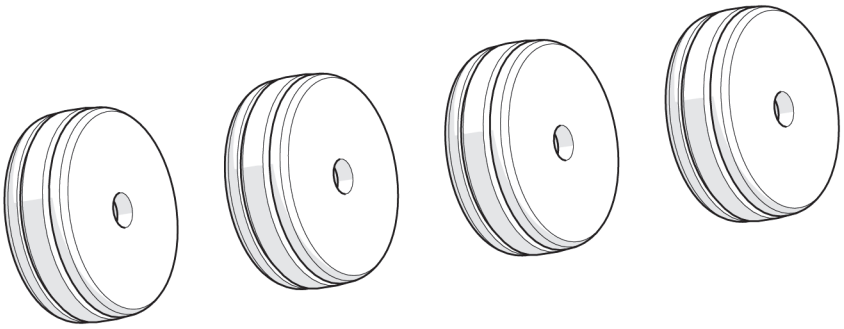

Figure 6-8 Magnetic wheel

Table 11 Magnetic wheel

Part #	Description
U8779383	Magnetic wheel

7. ChainSCANNER Specifications

This chapter contains the specifications for the ChainSCANNER.

7.1 General and Operating Environment Specifications

Table 12 General specifications

Parameter	Value
Pipe range outside diameter	76.2 mm (3.0 in.) to 965 mm (38 in.)
X-axis encoder	Resolution: 66.0 steps/mm (1676.3 steps/in.)
Y-axis encoder	Resolution: 161.3 steps/mm (4096.0 steps/in.)

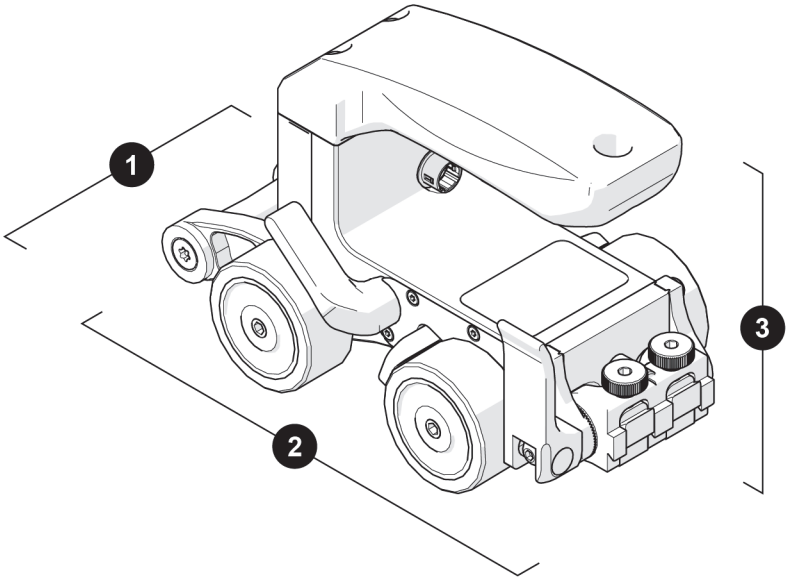

Figure 7-1 Cart dimensions

Table 13 Cart dimensions and Weight

Parameter	Value
Cart dimension (① × ② × ③)	8.1 cm × 15.3 cm × 9.8 cm (3.9in. × 3.2in. × 6.0 in.) (see Figure 7-1 on page 108).
Weight	670 g (1.48 lb)

Table 14 Operating environment specifications

Parameter	Value
Operating temperature	-20°C to 50°C (-4°F to 122°F)
Storage temperature	–30°C to 60°C (–22°F to 140°F)
Environmental Sealing	Watertight (submersible)

Appendix A: ChainSCANNER Sizing Charts

Use the sizing chart to find the right number of links for a given pipe size.

Each row in the chart shows an outside diameter range. The QUICKLINKS column indicates how many links are required for this range of diameters (see Table 15 on page 109).

Table 15 ChainSCANNER sizing chart

MIN (in.)	MAX (in.)	MIN (mm)	MAX (mm)	QUICKLINKS	DOVETAIL QUICKLINK
3.0	4.6	76	117	0	0
4.4	5.7	112	145	0	1
5.6	6.9	142	175	1	
6.8	8.0	173	203	2	
7.9	9.2	201	234	3	
9.0	10.3	229	262	4	
10.2	11.4	259	290	5	
11.2	12.5	284	318	6	
12.4	13.6	315	345	7	
13.4	14.7	340	373	8	
14.5	15.8	368	401	9	
15.6	16.9	396	429	10	
16.7	18.0	424	457	11	
17.8	19.1	452	485	12	
18.8	20.1	478	511	13	

Table 15 ChainSCANNER sizing chart *(continued)*

MIN (in.)	MAX (in.)	MIN (mm)	MAX (mm)	QUICKLINKS	DOVETAIL QUICKLINK
19.9	21.2	505	538	14	1
21.0	22.3	533	566	15	
22.1	23.4	561	594	16	
23.2	24.5	589	622	17	
24.2	25.6	615	650	18	
25.3	26.6	643	676	19	
26.4	27.7	671	704	20	
27.5	28.8	699	732	21	
28.5	29.9	724	759	22	
29.6	30.9	752	785	23	
30.7	32.0	780	813	24	
31.8	33.1	808	841	25	
32.8	34.2	833	869	26	
33.9	35.3	861	897	27	
35.0	36.3	889	922	28	
36.7	37.4	932	950	29	
37.1	38.5	942	978	30	

Appendix B: Wedge-Probe Assembly Maintenance

The following procedures are not specific to the ChainSCANNER. They are nevertheless useful information to complete this manual.

B.1 Adjustment of the Carbide Wear Pins on Wedges

Wedges are designed to hold a transducer or a phased array probe in order to ensure an adequate ultrasonic diffusion through the surface being inspected, and to direct the couplant flow correctly. To limit wear to the wedge, carbide wear pins can be inserted at each corner of the contact surface of the wedge (see Figure 7-2 on page 112).

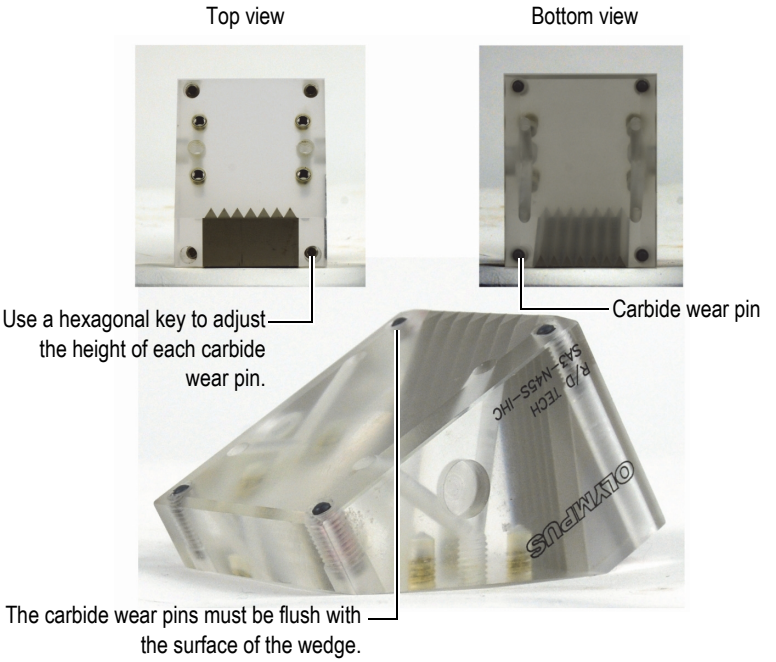

Figure 7-2 Carbide wear pin adjustment

To adjust the carbide wear pins on a wedge

1. Turn off the couplant flow.
2. Use a hexagonal key to adjust the height of the carbide wear pins on each installed wedge. Ensure that the top of each pin is flush to the surface of the wedge (see Figure 7-2 on page 112).

B.2 Replacing a Conventional Ultrasonic Transducer

To replace a conventional ultrasonic transducer, the assembly holding the transducer must be removed and partially disassembled.

To replace a conventional ultrasonic transducer

1. Turn off the couplant flow.
2. Disconnect the couplant tubes from the couplant source, or from the wedge.
3. Remove the scanner from the inspection surface.
4. Disconnect the transducer cable.
5. Lift the swing arm until the latch engages into its higher position (see "Probe Holder Adjustment" on page 59).
6. Use the wing knob to release the probe arm that holds the yoke parts together (see Figure 7-3 on page 115).
7. Ensure that the transducer cable is disconnected, and then unscrew the transducer from the wedge.

   It is possible to unscrew the transducer without removing the wedge.
8. Screw the new transducer onto the wedge.

NOTE

Before installing a new transducer on the wedge, ensure that there is a sufficient amount of couplant between the transducer and the wedge.

9. Tighten the transducer on the wedge.

CAUTION

Do not overtighten the transducer; overtightening might crack the wedge.

10. Reinstall the wedge in the yoke.
11. Lift the swing arm slightly.
12. Pull out the latch knob.
13. Release the swing arm slowly to its lower position.

B.3 Replacing a Phased Array Probe

To replace a phased array ultrasonic probe, the probe assembly must be removed and partially disassembled.

To replace a phased array probe

1. Turn off the couplant flow.
2. Disconnect the couplant tubes from the couplant source.
3. Disconnect the probe cable from the instrument.

CAUTION

To prevent any damage to the Hypertronics connector pins, be sure to always install the protective cover when the probe cable is disconnected.

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4. Remove the scanner from the inspection surface.
5. Lift the swing arm until the latch engages into its higher position (see Figure 2-31 on page 59).

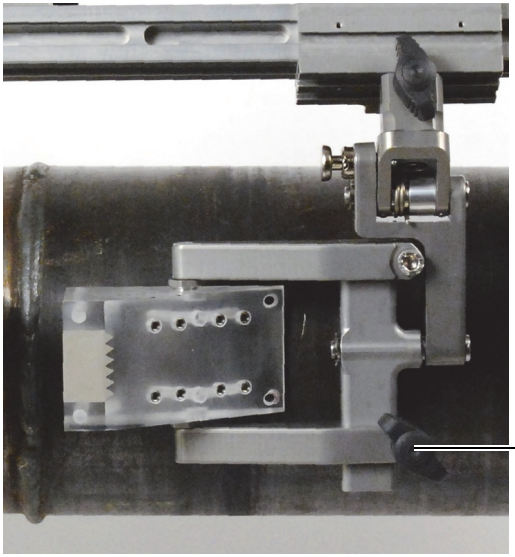

Figure 7-3 Mobile yoke arm wing knob

6. Use the wing knob to free the mobile yoke arm that holds the yoke parts together (see Figure 7-3 on page 115).
7. Using a cross-headed screwdriver, unscrew the screws that hold the probe on the wedge (either two or four screws, depending on the model), and then remove the probe.
8. Install the new probe onto the wedge.

NOTE

Before installing a new probe on the wedge, ensure that there is a sufficient amount of couplant between the probe and the wedge.

9. Tighten the screws that hold the probe on the wedge.

CAUTION

Do not overtighten the screws: overtightening might crack the wedge.

10. Reinstall the wedge-probe assembly on the yoke.
11. Lift the swing arm slightly.
12. Pull out the latch knob.
13. Release the swing arm slowly to its lower position (see Figure 2-31 on page 59).

List of Figures

List of Tables