MapSCANNER

User's Manual

10-049445-01EN — 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, Québec (QC) 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.

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List of Abbreviations

EFUP	environment-friendly use period

Important Information — Please Read Before Use

Intended Use

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

WARNING

Do not use the MapSCANNER 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 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.

IMPORTANT

Some of the details of components and/or software images in this manual may differ from your device's components or software display. However, the 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 MapSCANNER, check your local laws, rules, and regulations, and follow them accordingly.

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 MapSCANNER 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.

The MSIP code for the device is the following: MSIP-REM-OYN-SCANNER.

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 MapSCANNER 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: MapSCANNER
Model: MapSCANNER

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 SCIENTIFIC, 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 website https://www.evidentscientific.com/service-and-support/service-centers/.

Introduction

Intended Use

The MapSCANNER is a manually operated scanner that is available in two models:

- Chain link
- Magnetic

Both models are intended to provide positioning on two encoded axes during corrosion mapping inspection.

The chain link model is held to the pipe using a chain system. The magnetic model uses the ferromagnetic properties of pipes or plates to hold the magnetic wheels to the surface.

The MapSCANNER is intended to be used by persons who have read and understood this *User's Manual.*

Performance Specifications

Table 1 Performance specifications

Parameter	Minimum	Maximum
Scanner pipe/tube range	101.6 mm (4.0 in.)[a]	965.2 mm (38.0 in.) [chain link model] Flat (magnetic model)

Table 1 Performance specifications *(continued)*

Parameter	Minimum	Maximum
Umbilical length (Standard kit)	7.5 m (295.0 in.)	N/A
Scan encoder resolution	16.32 counts per mm (414.5 counts per in.)	N/A
Index Encoder resolution	40.31 counts per mm (1023.9 counts per in.)	N/A

a. 101.6 mm (4.0 in.) diameter scanning is only possible when using the reduced width of the arch (see “Arch Adjustment” on page 41).

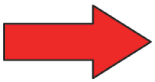
Operating Environment

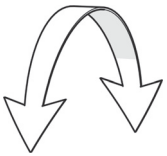
The MapSCANNER is designed for use in an industrial environment that is between −20°C (−4°F) and 50°C (122°F).

Environmental Sealing

Dust tight, water tight (not submersible).

Definition of Symbols

	Instructions to “look here” or to “see this part”.
	Denotes movement. Instructs the user to carry out action in a specified direction.
	Indicates alignment axis.

	Alerts user that view has changed to a reverse angle.

Included Tools

The 2 mm hex driver is suitable for index nut adjustments.

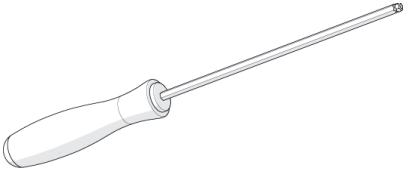


Figure i-1 2 mm hex driver

The 3 mm hex driver is suitable for typical MapSCANNER and probe holder adjustments (see Figure i-2 on page 23).

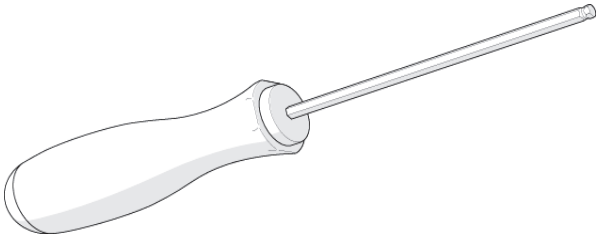


Figure i-2 3 mm hex driver

The 3/8 inch wrench is used to remove and install probe holder buttons (see Figure i-3 on page 24).

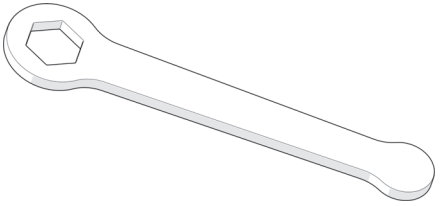


Figure i-3 3/8 inch wrench

Maintenance — Cleaning

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

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

NOTE

All components with wiring, cables or electrical connections are splash proof. However, these components are NOT submersible.

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

Operating in Elevated Positions

If you are operating the scanner on a surface higher than 2 m (6 ft), you must first secure it using an appropriate lanyard that is held taut at all times. The inspection surface must be free of rust, debris, or obstructions. Additionally, if you are inspecting a ferromagnetic surface using magnetic wheels, the surface must be continuously ferromagnetic (uninterrupted).

WARNING

To prevent injury and equipment damage when operating the scanner in an elevated position, secure it with a lanyard that is held taut. Also ensure the inspection surface is free of rust, debris, or obstructions and, when using magnetic wheels, is continuously ferromagnetic.

Work Gloves

When working on the scanner, wear suitable work gloves to protect against cuts.

Transporting the Scanner

It is recommended to use the carrying case when transporting the scanner from one location to another.

1. Configurations

1.1 Chain Link Model

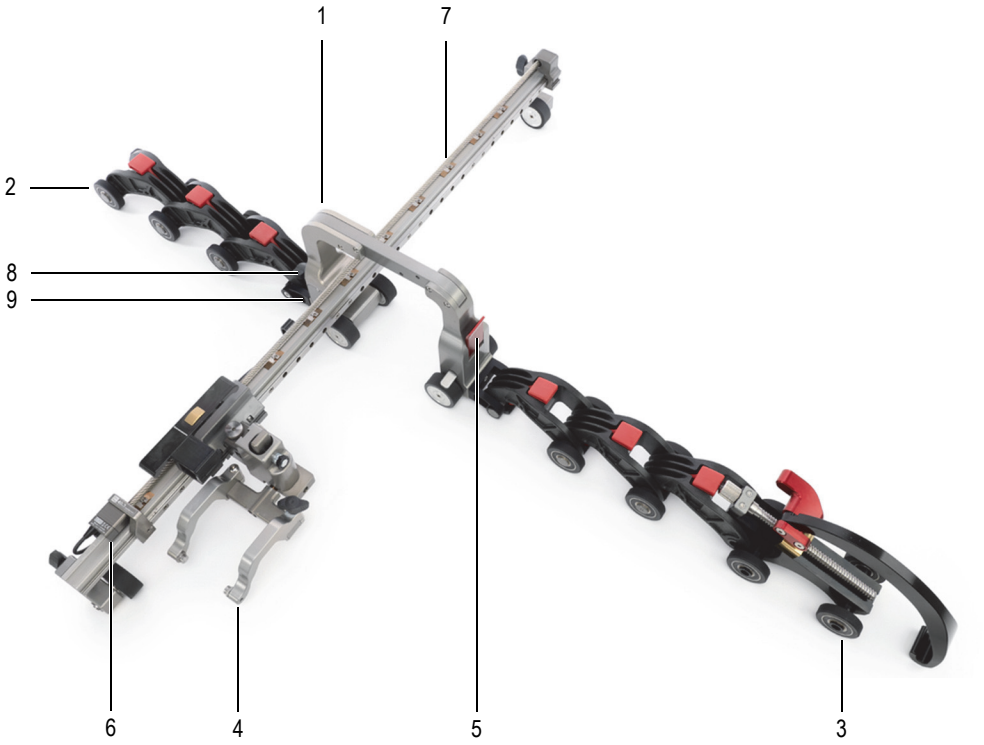


Figure 1-1 Chain link model key parts

Table 2 Chain link model key parts

ID	Description
1	Encoded arch
2	Quick link
3	Quick link buckle
4	Heavy duty probe holder
5	Brake
6	Index encoder
7	Leadscrew
8	Encoder connection
9	Raster connection

1.2 Magnetic Model

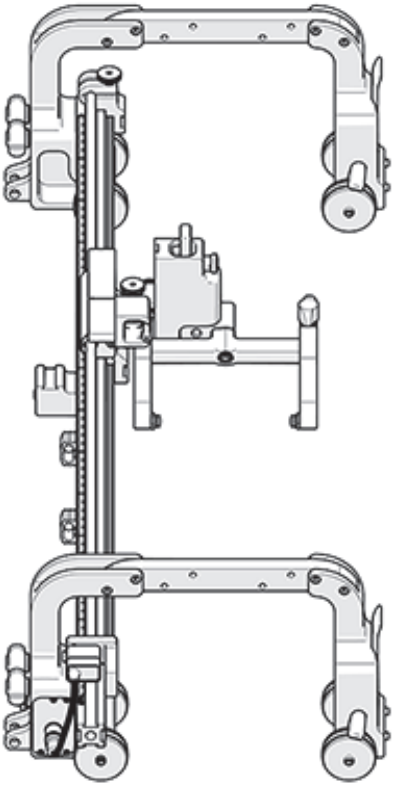


Figure 1-2 Magnetic model

2. Operation

2.1 Installing the MapSCANNER on a Scan Surface

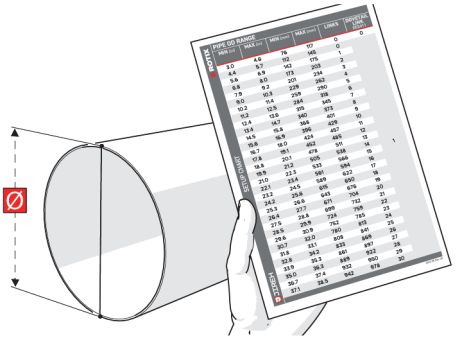


Figure 2-1 Refer to sizing chart

1. Determine the diameter of the pipe or tube to be scanned.
2. Based on the pipe or tubing diameter, use the sizing chart to find the number of links required (see Table 7 on page 77 and Figure 2-1 on page 31).

NOTE

The following example assumes a 30.5 cm (12 in.) pipe diameter

3. Ensure the appropriate configuration is set up.
4. Install the wedge to be used in the probe holder (see “Probe Holder Setup” on page 51).

5. On a flat surface, connect the appropriate number of links. See Table 7 on page 77 to determine the appropriate number of links. See “Disconnecting the Dovetail QuickLink” on page 65 for instructions on how to connect the links.
6. Arrange the link setup with the buckle and catch link 180° opposite of the arch (Figure 2-2 on page 32).

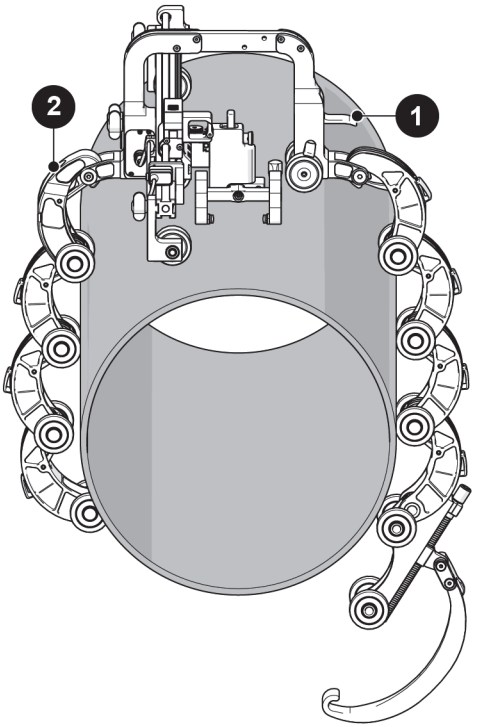


Figure 2-2 Dovetail link (2), brake (1)

7. Place the dovetail link after the arch (see Figure 2-2 on page 32).
8. Ensure the brake is activated (see Figure 2-2 on page 32). See “Brake” on page 45 for instructions on activating the brake.

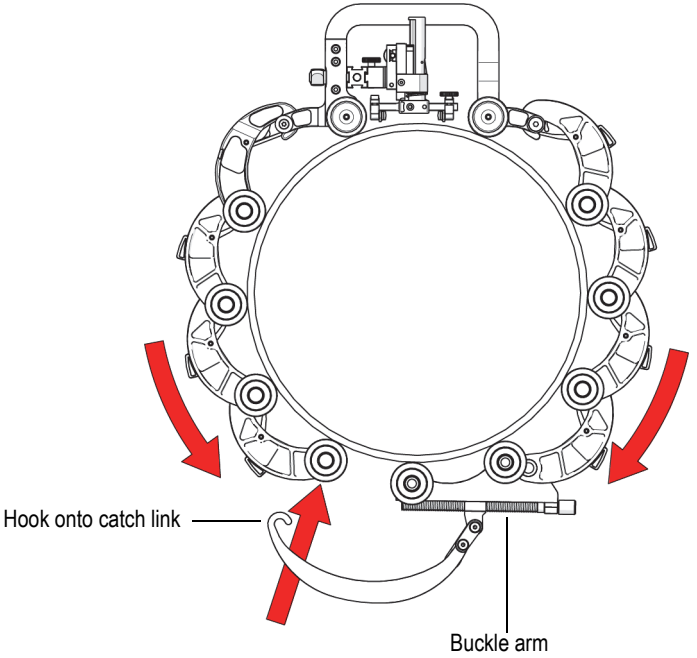


Figure 2-3 Hook buckle arm to catch link

9. Drape the configured chain assembly around the pipe or tube to be inspected (see Figure 2-3 on page 33).
10. Bring the buckle arm towards the catch link (see Figure 2-3 on page 33).
11. Hook the buckle arm to the middle axle of the catch link (see Figure 2-3 on page 33).

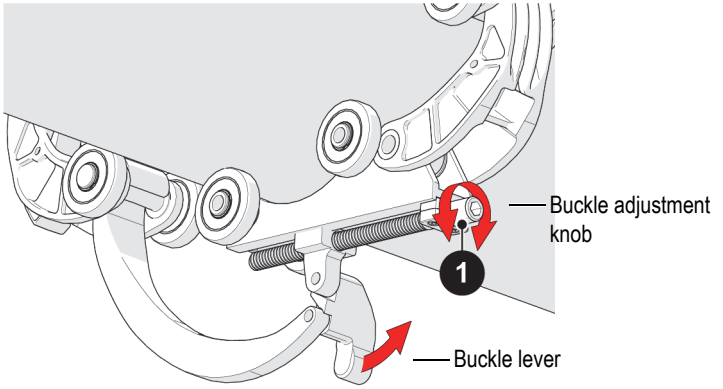


Figure 2-4 Buckle pressure adjustment

12. If required, loosen the buckle adjustment knob and the buckle lever to allow the arm to reach the catch link (see Figure 2-4 on page 34).
13. Rotate the buckle adjustment knob until you can push the buckle lever down, and lock the buckle in place (see Figure 2-4 on page 34).
14. Adjust the MapSCANNER tightness on the pipe using the buckle adjustment knob.

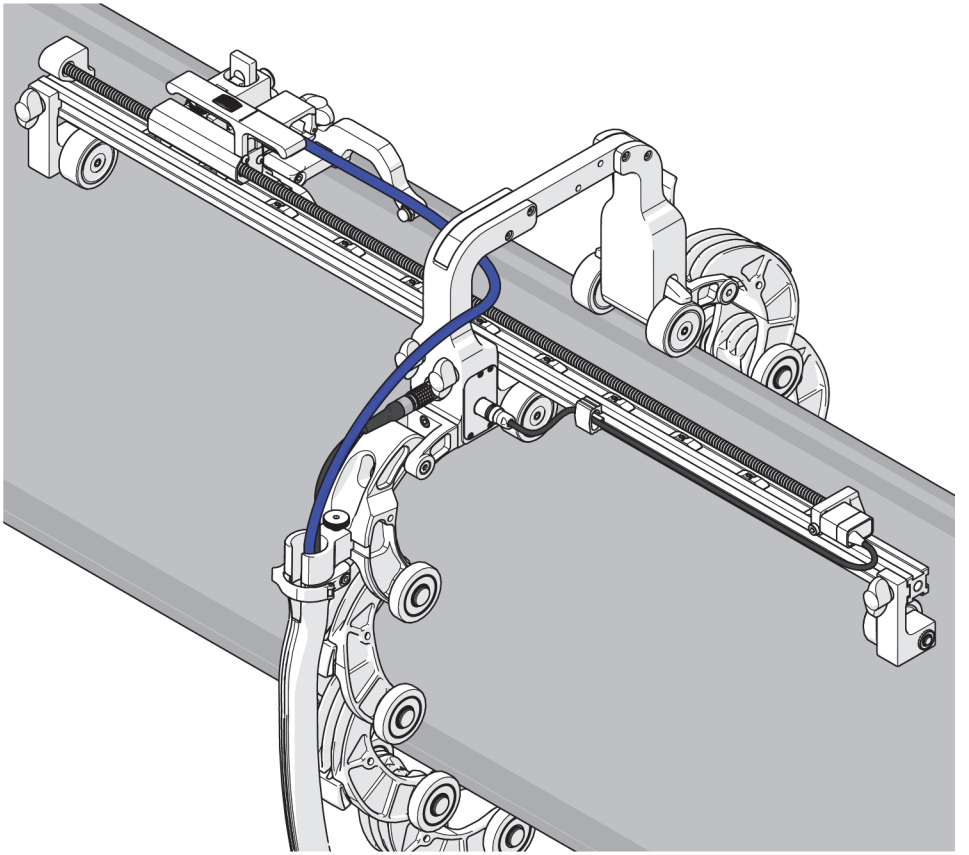


Figure 2-5 Cable and hose routing

15. Route all cabling and hoses (encoder cable and sample irrigation tube shown) through the zipper tube.

    See “Cable Management System” on page 67 for instructions on cable routing.
16. Lower probe holders to the scan surface.

    See “Probe Holder Setup” on page 51 for instructions on setting up probe holders.
17. Release the brake to commence scanning.

    See “Brake” on page 45 for instructions on using the brake.

2.2 Magnetic Scanner Scanning Surface Setup

WARNING

The MapSCANNER scanner has magnetic wheels that must be carefully handled to prevent the risk of injury and equipment damage from magnetic fields and inadvertent attractive forces. Before unpacking and handling the scanner, observe the magnetic wheel safety precautions, as outlined in the warning note in “Safety Symbols” on page 11.

1. Ensure that the appropriate configuration is set up (see Figure 2-6 on page 36).
2. Install the wedge to be used in the probe holder.

   See “Heavy Duty Vertical Probe Holder” on page 50 for instructions on using the probe holder.
3. Ensure that the brakes are activated on both arches.

   See “Brake” on page 45 for instructions on using the brake.

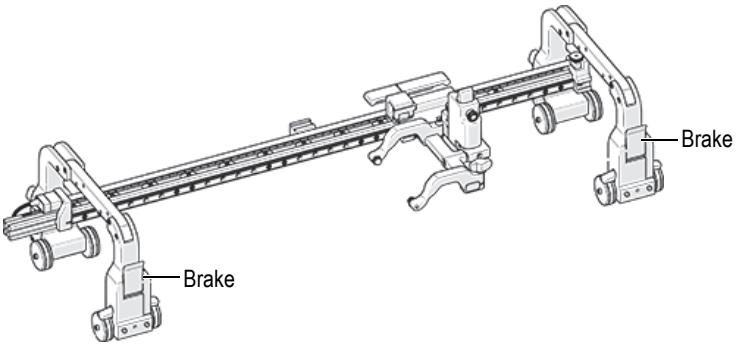


Figure 2-6 Configure magnetic scanner and set brakes

4. Place the MapSCANNER on the scanning surface (see Figure 2-7 on page 37).

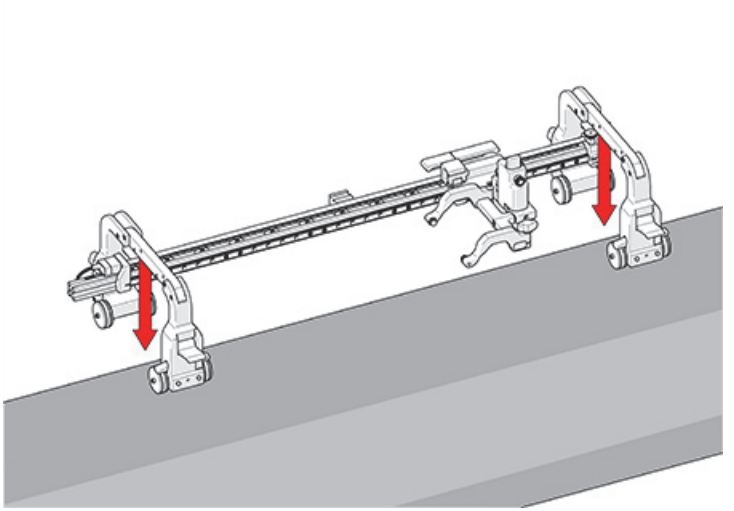


Figure 2-7 Placing magnetic scanner on scan surface

CAUTION

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

5. Ensure that the frame bar extends past the arch on the encoder side (see Figure 2-8 on page 38).

   This will provide protection to the index encoder connector. The non-encoded link can be flush with the frame bar.

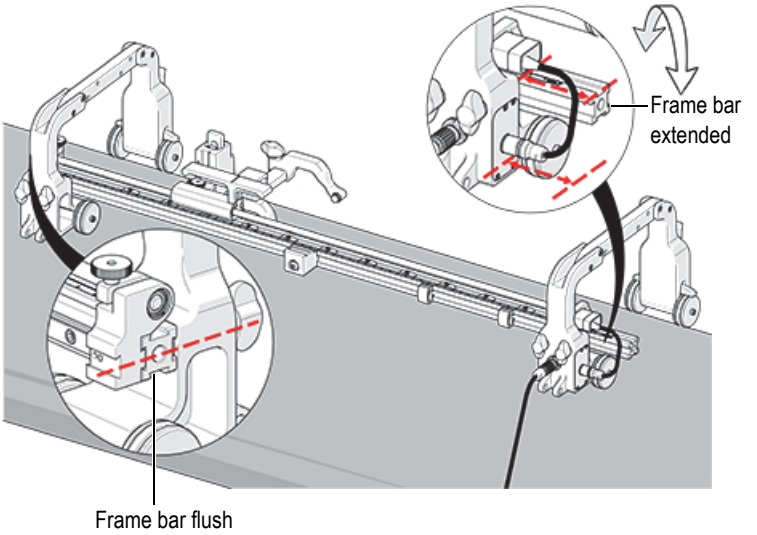


Figure 2-8 Setting the frame bar

3. System Components

3.1 Non-Encoded Arch (Magnetic Model Only)

WARNING

The MapSCANNER scanner has magnetic wheels that must be carefully handled to prevent the risk of injury and equipment damage from magnetic fields and inadvertent attractive forces. Before unpacking and handling the scanner, observe the magnetic wheel safety precautions, as outlined in the warning note in “Safety Symbols” on page 11.

The non-encoded arch provides braking for the system (see Figure 3-1 on page 40). A mounting point for the frame bar is also provided.

The arch length can be adjusted to increase the scanner’s diameter range and to allow probe clearance.

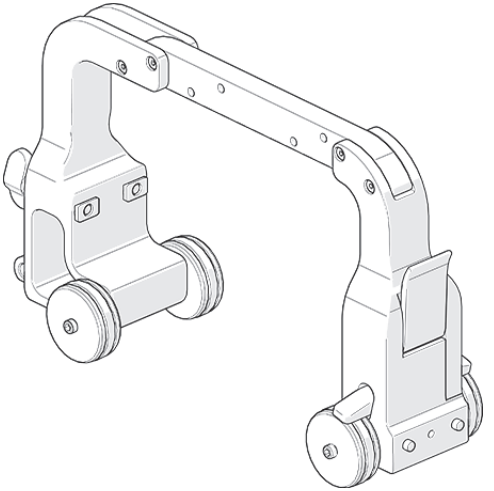


Figure 3-1 Non-encoded arch

3.2 Encoded Arch

The arch provides braking for the system as well as an internal encoder connected to the wheels. A connection plug exists for index encoding. A mounting point for a frame bar is also provided.

The arch length can be adjusted to increase the scanner's diameter range and to allow probe clearance (magnetic model only).

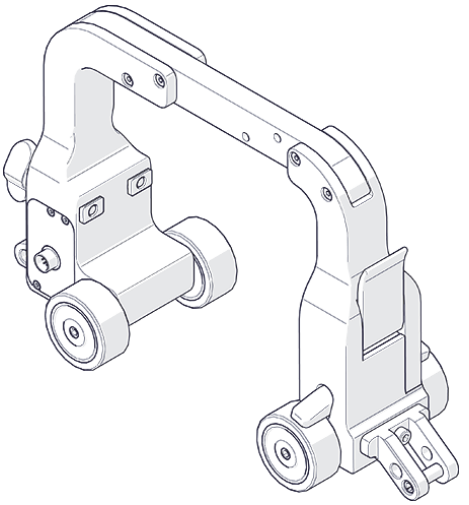


Figure 3-2 Encoded arch

3.2.1 Arch Adjustment

NOTE

Adjusting the arch to a wider configuration limits the minimum diameter scan capabilities to 20.32 cm (8 in.).

1. Use the supplied 2 mm hex driver to remove the two shoulder screws (see Figure 3-3 on page 42).

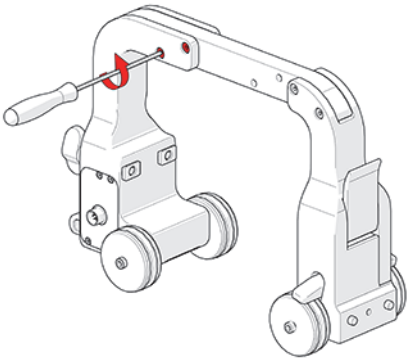


Figure 3-3 Remove shoulder screws

2. With the two shoulder screws removed, position the two halves of the arch farther apart, align the screw holes, and insert the shoulder screws (see Figure 3-4 on page 42).

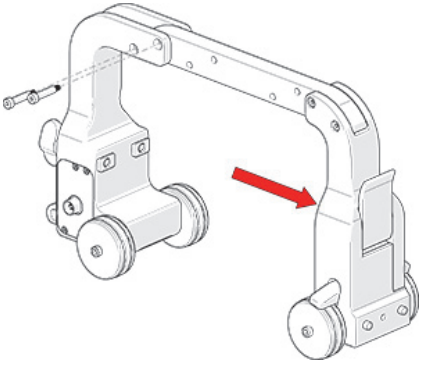


Figure 3-4 Align screw holes

3. Tighten the two shoulder screws with the supplied 2 mm hex driver (see Figure 3-5 on page 43).

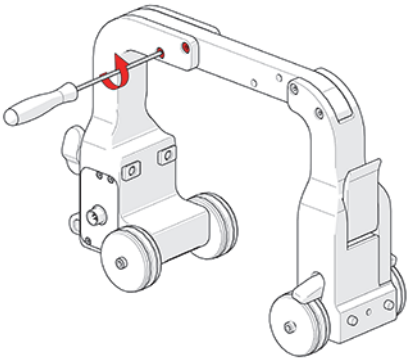


Figure 3-5 Tighten shoulder screws

3.2.2 Mounting a Frame Bar

Loosen the two wing knobs of the arch and slide the frame bar along the dovetail nuts of the arch (see Figure 3-6 on page 43).

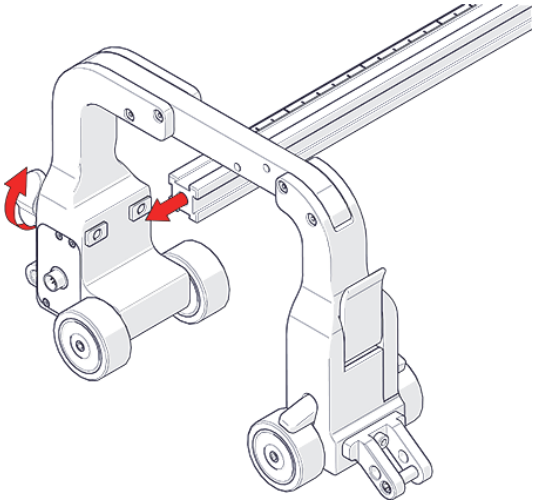


Figure 3-6 Wing knobs and frame bat

When the frame bar is positioned where appropriate, tighten the two wing knobs (see Figure 3-7 on page 44).

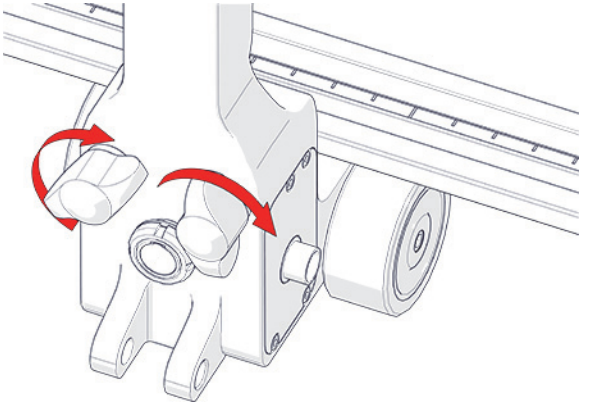


Figure 3-7 Wing knobs tightened

3.2.3 Index Encoder Connection

The index encoder connection is located along the side of the arch (see Figure 3-8 on page 44). The cable from the encoder connects to this point.

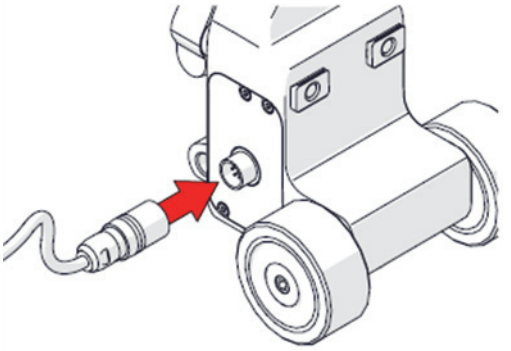


Figure 3-8 Index encoder connection

3.2.4 Encoder Connection

The encoder connection is located at the rear of the arch (see Figure 3-9 on page 45). The encoder cable connects to this point. The opposite end of the encoder cable connects to your instrument.

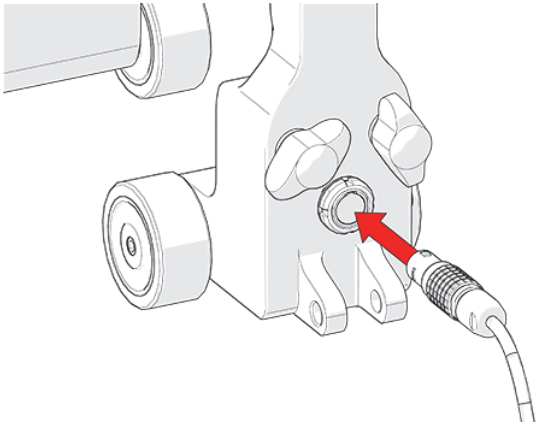


Figure 3-9 Encoder connection

3.2.5 Brake

The red brake lever located on the arch provides braking to the system.

- Press the lever down to activate the brake.

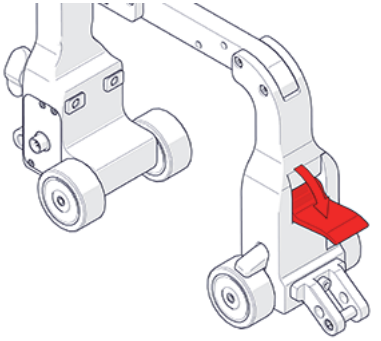


Figure 3-10 Brake

TIP

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

3.2.6 Wheel Removal

Tightly grip the wheel to be removed. Using the supplied 3 mm hex driver, loosen the wheel from the axle (see Figure 3-11 on page 47).

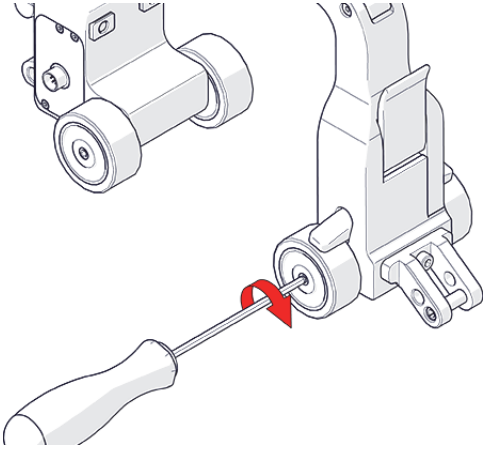


Figure 3-11 Wheel removal

3.2.7 Tail (Chain Link Model Only)

The tail is a mounting point for the buckle and chain links (see Figure 3-12 on page 47). Use the supplied 3 mm hex driver to install or remove the tail.

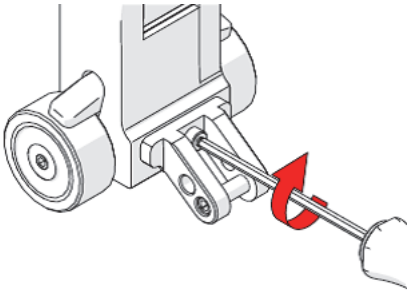


Figure 3-12 Tail

3.2.8 Carrier

Press the latch on the carrier handle to disengage the carrier and move it along the rail. Release the latch before reaching the next index position. The carrier will lock itself at the next index position (see Figure 3-13 on page 48).

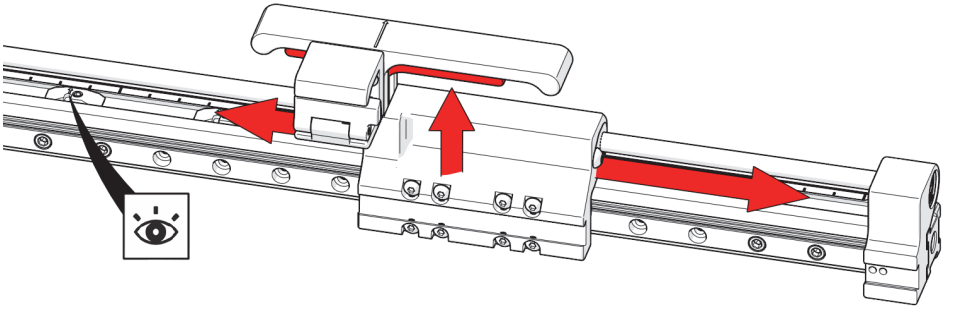


Figure 3-13 Carrier handle latch

3.2.9 Carrier Cable Clip

1. Push the cable clip flap down (see Figure 3-14 on page 48).

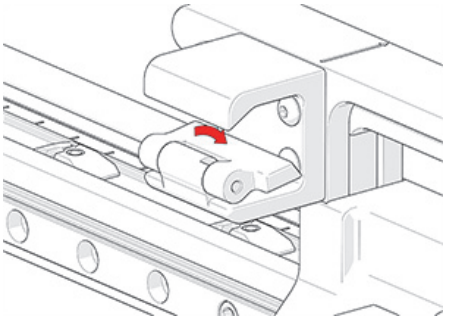


Figure 3-14 Carrier cable clip flap

2. Insert the necessary cables and hoses (see Figure 3-15 on page 49).

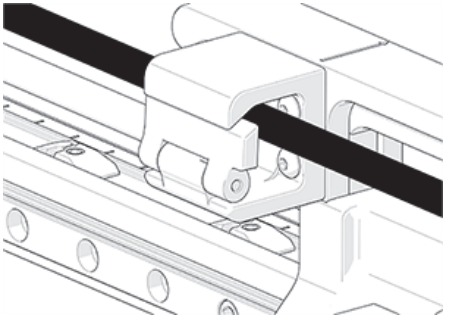


Figure 3-15 Carrier cable clip

3.2.10 Index Nuts

The index nuts located along the frame bar offer index positions during scans (see Figure 3-16 on page 49). The arrow on each nut confirms alignment with the ruler on the frame bar.

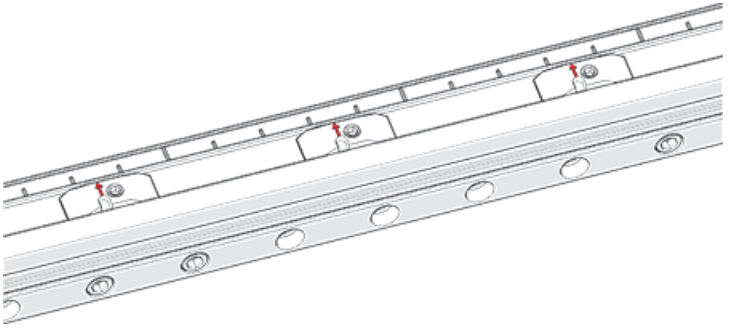


Figure 3-16 Index nuts

NOTE

The index nuts can be repositioned (see Figure 3-17 on page 50). Placement of the index nuts works in conjunction with common probe specifications. Excessive adjustment of the index nuts is not recommended.

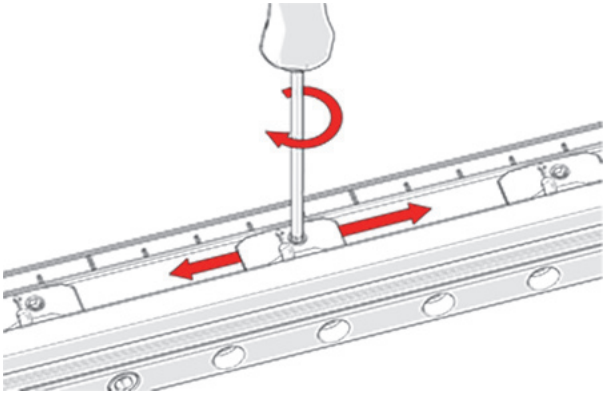


Figure 3-17 Position index nuts

3.3 Heavy Duty Vertical Probe Holder

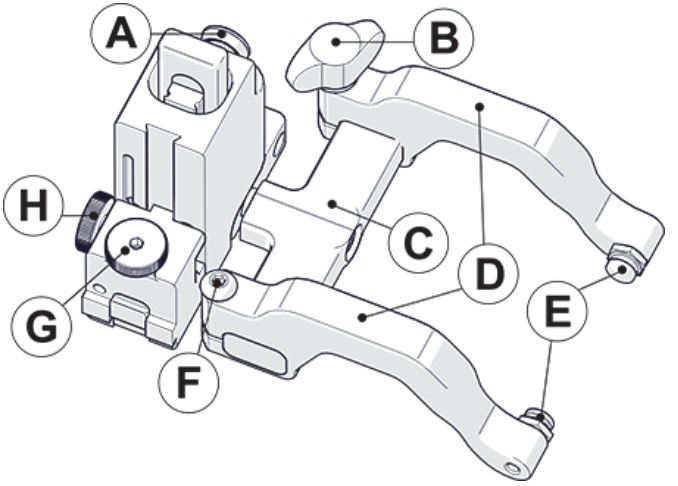


Figure 3-18 Heavy duty vertical probe holder

Table 3 Heavy duty vertical probe holder

ID	Description
A	Latch
B	Probe holder arm adjustment knob
C	Yoke
D	Probe holder arms
E	Pivot buttons
F	Arm clamp screw
G	Probe holder adjustment knob
H	Vertical adjustment knob

3.3.1 Probe Holder Setup

1. Loosen the probe holder adjustment knob and mount the heavy duty vertical probe holder dovetail jaw to the carrier (see Figure 3-19 on page 51).

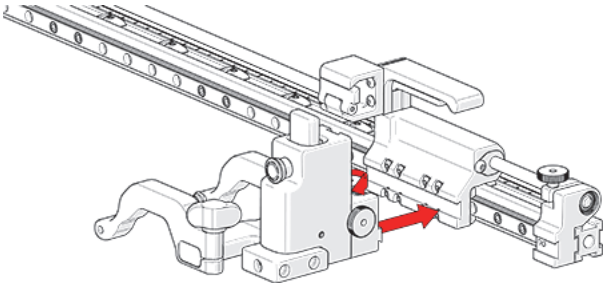


Figure 3-19 Mount probe holder to carrier

The vertical adjustment knob allows the heavy duty vertical probe holder height adjustment (see Figure 3-20 on page 52). This adjustment also controls the probe holders spring tension.

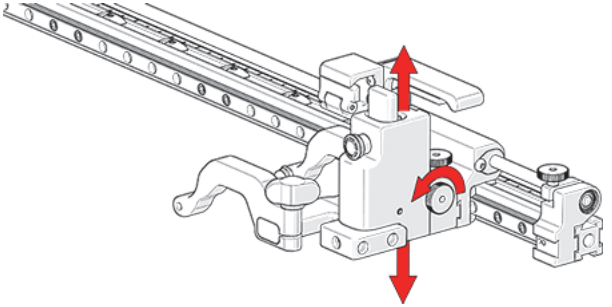


Figure 3-20 Vertical adjustment

2. Loosen the probe holder adjustment knob and remove the outer probe holder arm (see Figure 3-21 on page 52).

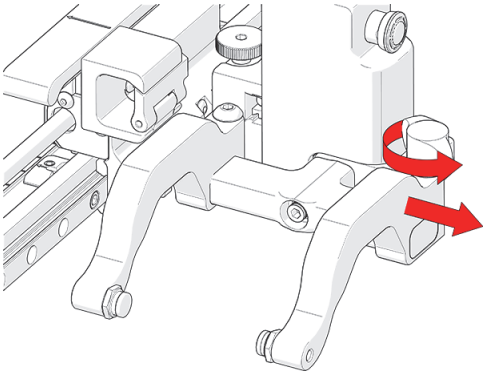


Figure 3-21 Remove outer arm

3. Loosen the arm clamp screw (see Figure 3-22 on page 53).
4. Place the wedge on the pivot button of the inner probe holder arm.

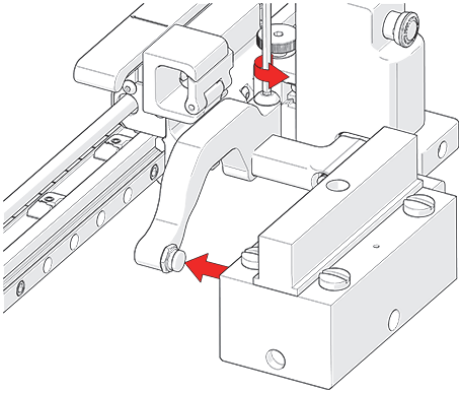


Figure 3-22 Adjust inner arm

5. Align the middle of the wedge with the center of the yoke (see Figure 3-23 on page 53).

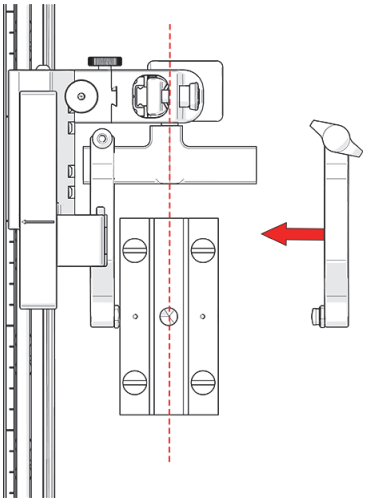


Figure 3-23 Reinstalling the outer arm

6. Tighten both the probe holder adjustment knob and the arm clamp screw while ensuring the wedge remains centered with the yoke (see Figure 3-24 on page 54).

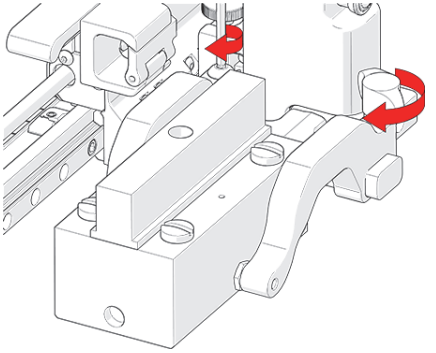


Figure 3-24 Tightening the arm screws

3.3.2 Probe Holder Vertical Adjustment

1. Gently lift the heavy duty probe holder and simultaneously pull the latch (see Figure 3-25 on page 54).
   This action will unlock the probe holder.

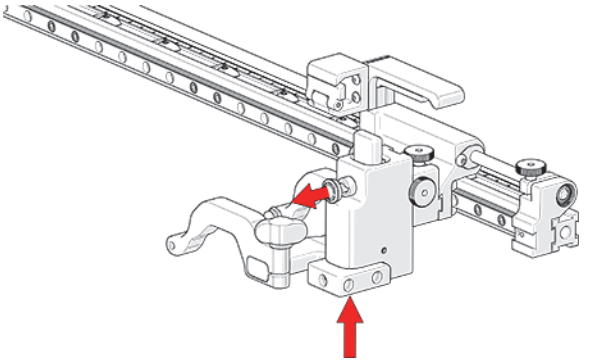


Figure 3-25 Press up and pull latch

2. Slowly lower the probe holder towards the scan surface (see Figure 3-26 on page 55).

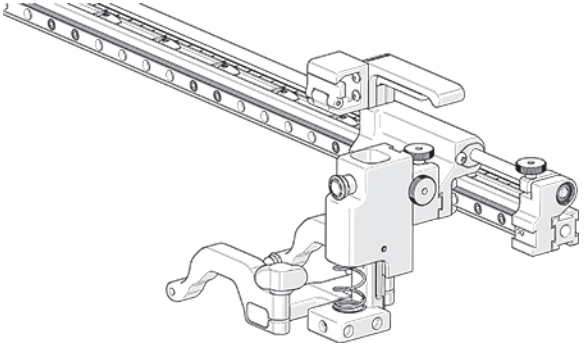


Figure 3-26 Lowered toward scan surface

3.3.3 Probe Holder Left/Right Conversion

1. Using the supplied 3 mm driver, unscrew the yoke (see Figure 3-27 on page 55).

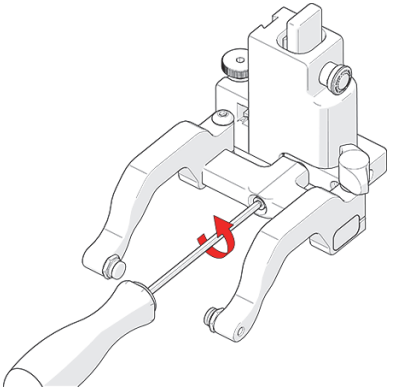


Figure 3-27 Remove yoke

2. Position the yoke and arms to the opposite side of the probe holder (see Figure 3-28 on page 56).

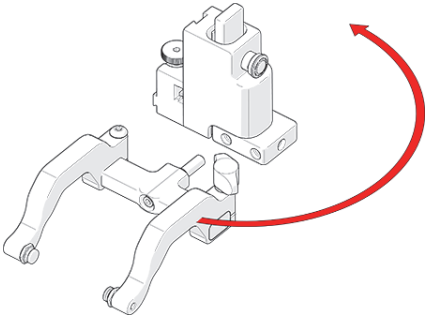


Figure 3-28 Orient to opposite side

3. Loosen the arm clamp screw and the probe holder arm adjustment knob, and then remove the probe holder arms (see Figure 3-29 on page 56).

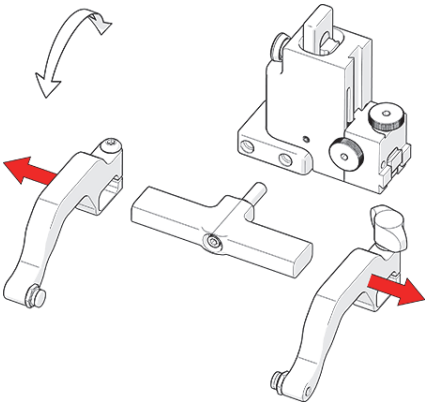


Figure 3-29 Remove probe holder arms

4. Position the removed arms to the opposite sides of the yoke (see Figure 3-30 on page 57).

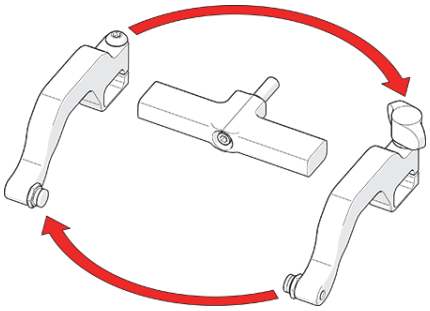


Figure 3-30 Reverse position around yoke

5. Position the pivot buttons to the inside of the probe holder arms (see Figure 3-31 on page 57).

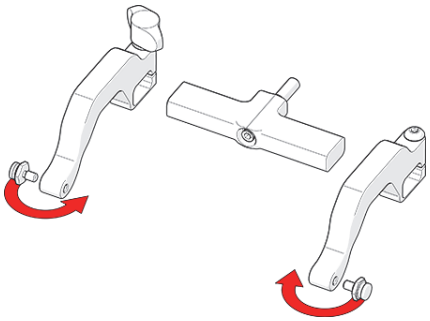


Figure 3-31 Position pivot buttons

Place the probe holder arms on the yoke and tighten the arm clamp screw and probe holder adjustment knob (see Figure 3-33 on page 59).

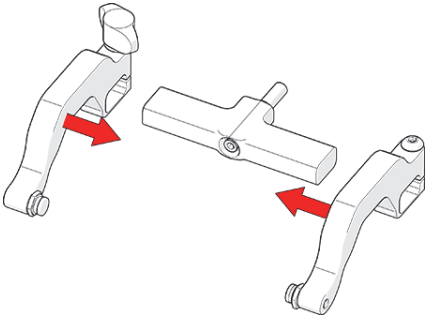


Figure 3-32 Place arms back onto yoke

Use the supplied 3 mm driver to screw the yoke to the probe holder (see Figure 3-33 on page 59).

TIP

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

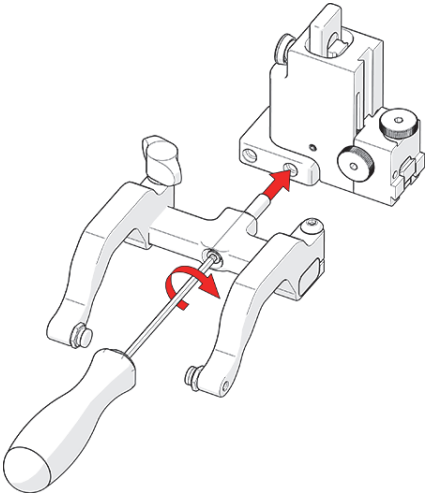


Figure 3-33 Screw into threaded hole

3.3.4 Probe Holder 90° Adjustment

1. Remove the yoke using the supplied 3 mm hex driver (see Figure 3-27 on page 55).
2. Orient the yoke to the front of the probe holder and screw the yoke into the threaded hole provided (see Figure 3-34 on page 59).

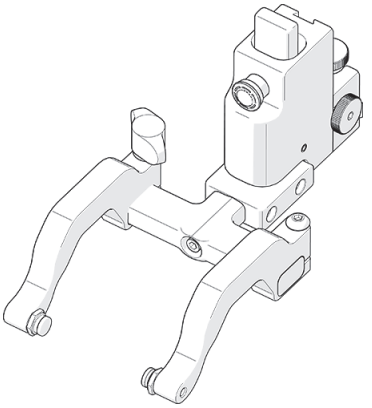


Figure 3-34 90° Probe holder positioning

3.4 Frame Bar with Ruler

Frame bars are used to mount probe holders, probe positioning systems and other accessories. The frame bar includes a ruler with 1 mm measurements (see Figure 3-35 on page 60). The ruler can be used to assist with positioning of index nuts.

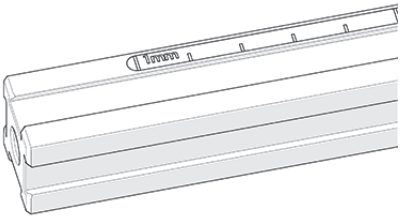


Figure 3-35 Frame bar

3.5 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 i-3 on page 24) to remove and install pivot buttons (see Figure 3-36 on page 60).

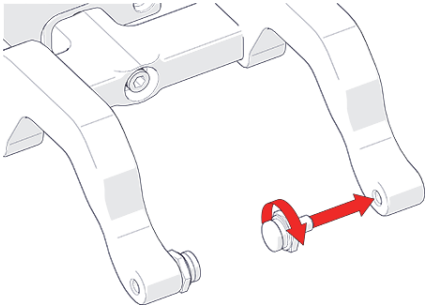


Figure 3-36 Pivot buttons

3.6 Index Encoder

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

To install the index encoder

1. Loosen the clamp screw on the encoder with the supplied 3 mm hex driver (see Figure 3-37 on page 61).

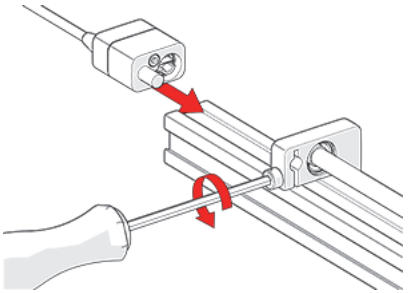


Figure 3-37 Loosen and slide post in place

2. Insert the encoder post in the index encoder support bracket while aligning the leadscrew shaft with the encoder socket (see Figure 3-38 on page 62).

TIP

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

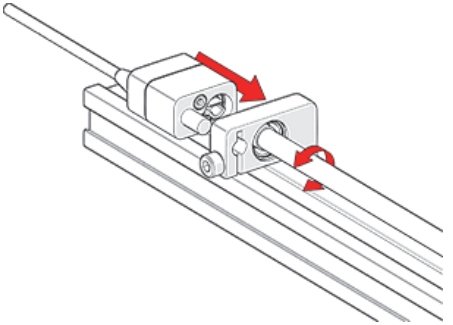


Figure 3-38 Align and mount post

3. Tighten the 3 mm clamp screw on the index encoder support bracket (see Figure 3-39 on page 62).

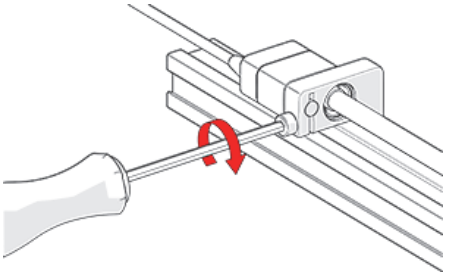


Figure 3-39 Tighten clamp screw

4. Route the cable along the frame bar using the cable clips (see Figure 3-40 on page 63).
5. Plug the index encoder connector to the arch.

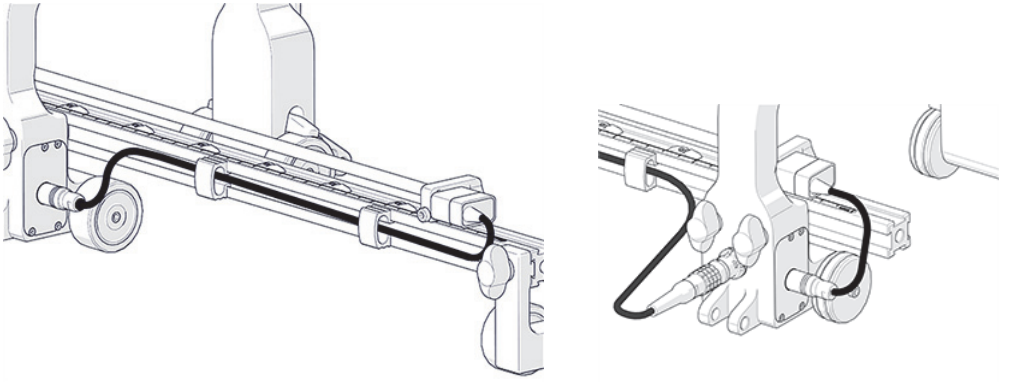


Figure 3-40 Connect the index encoder to the arch

3.7 QuickLink Components

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

3.7.1 QuickLink

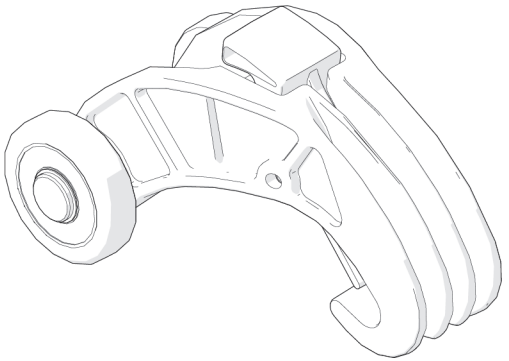


Figure 3-41 QuickLink

You can connect the QuickLinks to assemble the required length to mount the system on a pipe (see Figure 3-41 on page 63).

3.7.2 Dovetail QuickLink

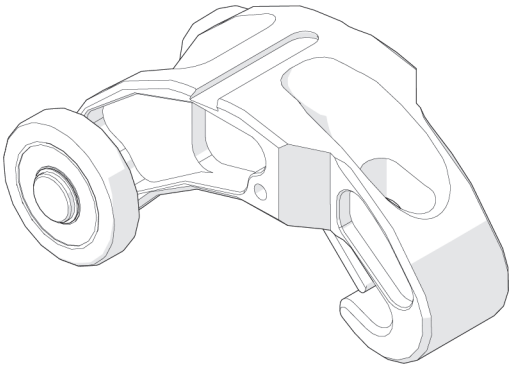


Figure 3-42 Dovetail QuickLink

The dovetail QuickLink connects to QuickLinks, providing a mounting point for accessories such as cable management (see Figure 3-42 on page 64).

3.7.3 QuickLink Buckle

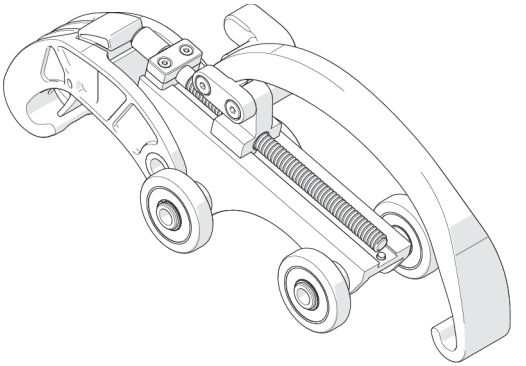


Figure 3-43 QuickLink buckle

The QuickLink buckle enables adjustment of the chain tension and provides the connection point of the QuickLinks assembly (see Figure 3-43 on page 64).

3.7.4 Disconnecting the Dovetail QuickLink

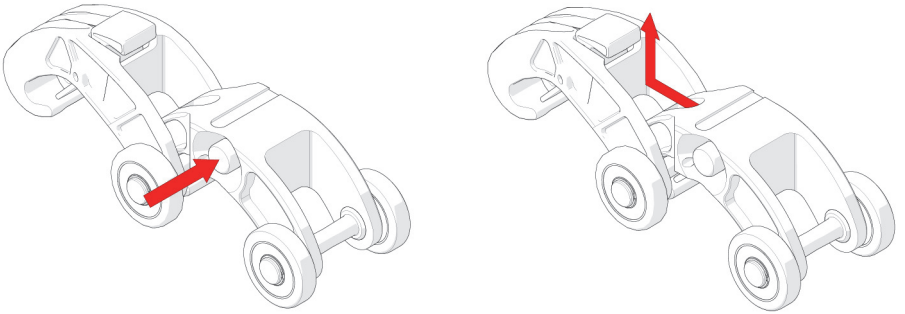


Figure 3-44 Press red button, slide forward, and lift

To disconnect dovetail QuickLinks

1. Press the button on the side of the dovetail QuickLink (Figure 3-44 on page 65).
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 3-44 on page 65).

3.7.5 Ratchet Lever

The ratchet lever is used with the buckle of the MapSCANNER system. Occasionally, movement of the lever locking position is required.

To adjust the lever placement

1. Pull the ratchet lever away from the base to which it is connected (see Figure 3-45 on page 66).

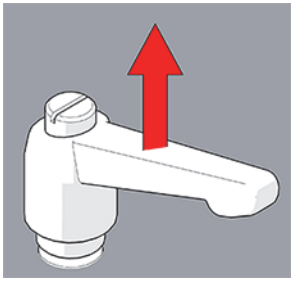


Figure 3-45 Pull ratchet handle

2. Continue to pull the lever, while rotating it in the appropriate direction (see Figure 3-46 on page 66).

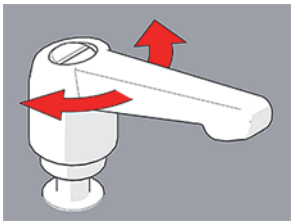


Figure 3-46 Rotate handle

3. Release the lever and use the new tightening position (see Figure 3-47 on page 66).

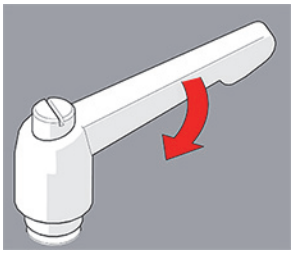


Figure 3-47 Tighten handle

3.8 Cable Clips

Clips have been provided to assist with cable management. Pinch the clip an and press it into the dovetail groove of the frame bar (see Figure 3-48 on page 67).

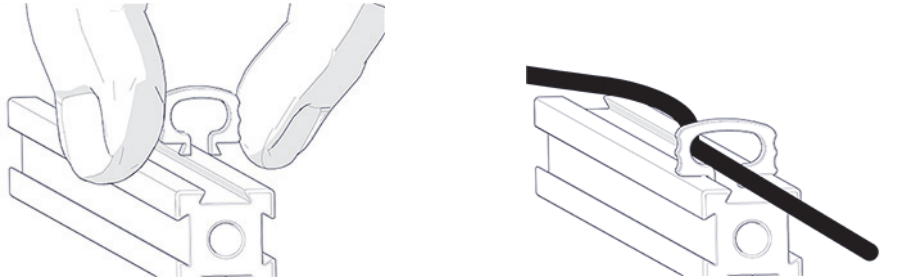


Figure 3-48 Pinch clip and routed cable

3.9 Cable Management System

TIP

When using the zipper tube, ensure that the dovetail link is placed in the second position in the chain, after the overhead adjustable link (see Figure 3-49 on page 67).

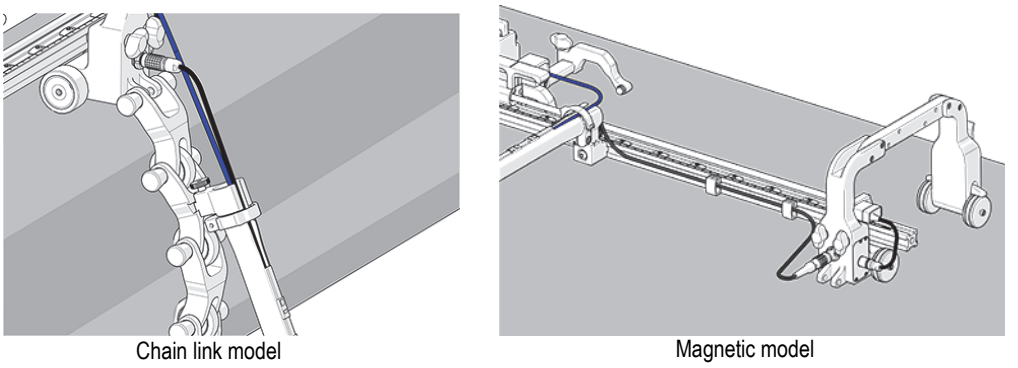


Figure 3-49 Cable management

3.9.1 Zipper Tube Dovetail Mount

To attach a zipper tube for cable management

1. Loosen the knob on the zipper tube dovetail mount. Slide the mount onto the dovetail link (see Figure 3-50 on page 68).

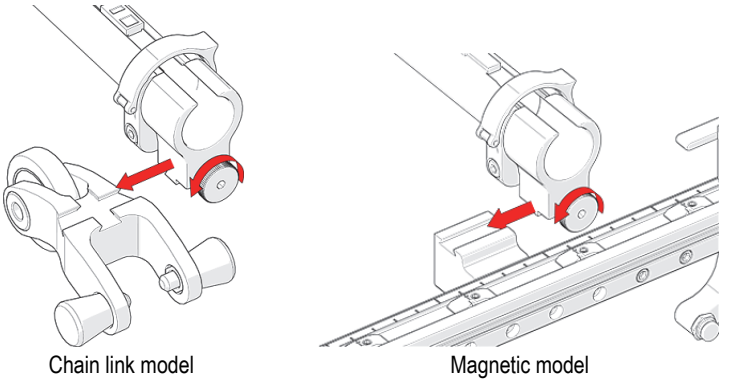


Figure 3-50 Loosen and slide on

2. When it is centered on the dovetail link, tighten the zipper tube's dovetail mount knob (see Figure 3-51 on page 68).

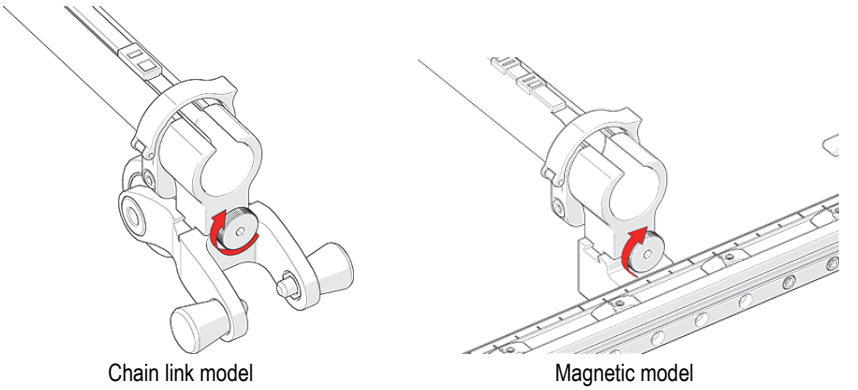


Figure 3-51 Tighten knob

3.9.2 Zipper Tube Setup

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

1. Open the zipper tube and cable clip. Begin at the tube's dovetail mount and place the cabling in the tube (see Figure 3-52 on page 69).

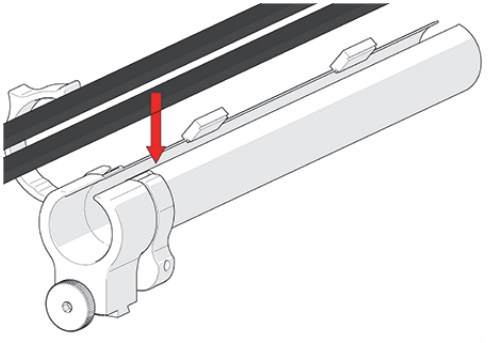


Figure 3-52 Insert cables and hoses

2. As you place the cable in the tube, zip the tube closed and close the zipper tube cable clip (see Figure 3-53 on page 69).

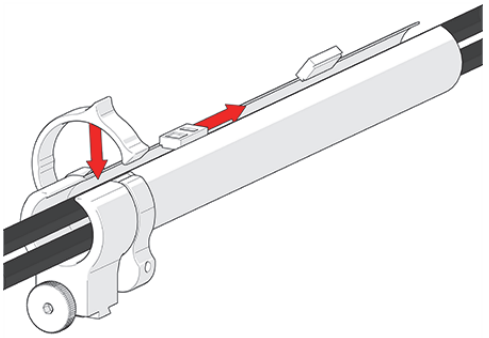


Figure 3-53 Zip up to close

3. Once the cable is placed the entire length of tube, bring the zipper from the tube's opposite end, meeting at any point in the middle (see Figure 3-54 on page 70).

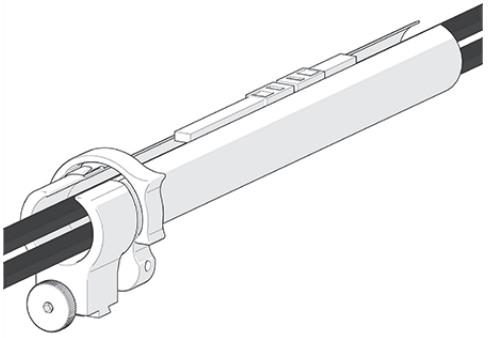


Figure 3-54 Zip opposite end

4. When necessary, the two zippers may be opened to allow any cables to exit the tube anywhere between the ends (see Figure 3-55 on page 70).

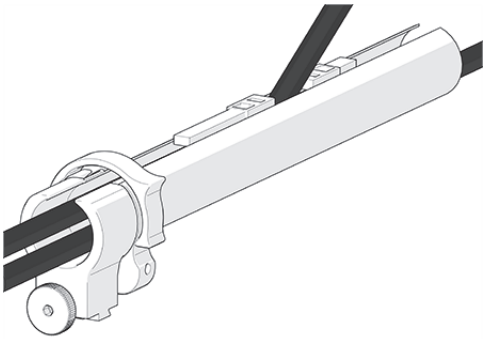


Figure 3-55 Flexibility

3.9.3 Clamp Setup

If the tube becomes disconnected from the zipper tube dovetail mount, re-attach the tube and dovetail mount.

To re-attach the tube and dovetail mount

1. Using the supplied 3 mm hex driver, loosen the clamp screw.
2. Slide the clamp around the tube first, and then slide the tube around the outside of the zipper tube dovetail mount (see Figure 3-56 on page 71).

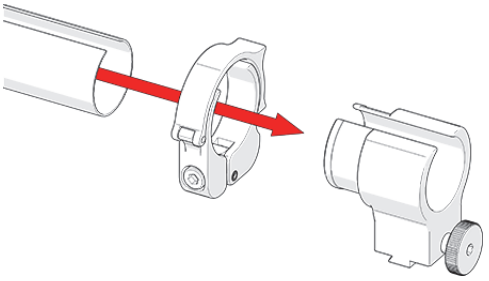


Figure 3-56 Slide tube around mount

3. Align the zipper opening and the zipper tube dovetail mount opening.
4. Slide the clamp over the tube and zipper tube dovetail mount, pinching the tube in between (see Figure 3-57 on page 71).

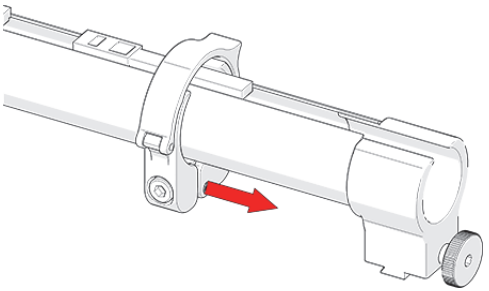


Figure 3-57 Slide clamp onto mount

5. Tighten the clamp screw (see Figure 3-58 on page 72).

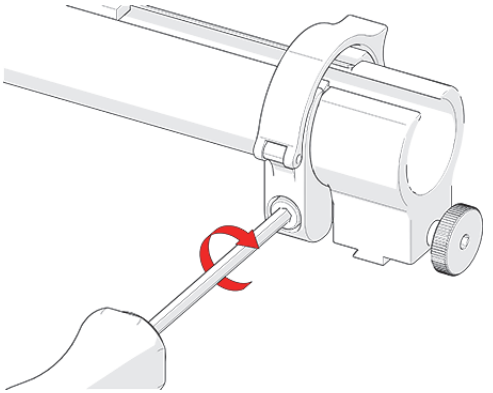


Figure 3-58 Tighten clamp screw

4. Troubleshooting

4.1 Chain Link Model

Table 4 Chain link model troubleshooting table

Problem	Possible cause	Solution
Chain is too loose or too tight	Incorrect number or combination of links for proper scanner configuration.	1. Refer to the sizing chart (see Table 7 on page 77) for the required number of links for the diameter of pipe or tube that is to be scanned. 2. Verify the correct outer diameter measurement of the pipe or tube. 3. Reset the scanner with the correct number of links.
	Buckle is incorrectly set up.	Adjust tightness of buckle (see Figure 2-4 on page 34).
Insufficient probe contact	Scanner not set properly.	Reconfigure the scanner (see "QuickLink Components" on page 63).

For technical assistance, see "Technical Support" on page 19.

4.2 Magnetic Scanner

Table 5 Magnetic scanner troubleshooting table

Problem	Possible cause	Solution
Encoder is not functioning	Instrument is not properly set up	Refer to instrument documentation.
	Issue with the encoder	Contact Evident technical support (see “Technical Support” on page 19).

WARNING

The MapSCANNER scanner has magnetic wheels that must be carefully handled to prevent the risk of injury and equipment damage from magnetic fields and inadvertent attractive forces. Before unpacking and handling the scanner, observe the magnetic wheel safety precautions, as outlined in the warning note in “Safety Symbols” on page 11.

5. Specifications

Table 6 on page 75 contains general specifications for the MapSCANNER.

Table 6 General specifications

Category	Parameter	Value
Voltage and current	Voltage	5 V
	Current	55 mA
Operating environment	Operating temperature	−20°C to 50°C (−4°F to 122°F)
	Maximum relative humidity	90%, noncondensing
	Pollution degree	2
	Altitude	Up to 2000 m (6561 ft)
Physical characteristics	Size	1370 mm × 440 mm × 180 mm (54.9 in. × 17.3 in. × 7.1 in.)
	Weight	29.8 kg (65.7 lb)
Magnetic wheels	Magnetic attraction	2.54 cm (1 in.) thick for a steel surface of 5.44 kg (12 lb)

Appendix A: MapSCANNER Sizing Chart

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 the diameter range (see Table 7 on page 77)

Table 7 MapSCANNER sizing chart

MIN (in.)	MAX (in.)	MIN (mm)	MAX (mm)	QUICKLINKS	DOVETAIL QUICKLINK
4.0	5.1	102	130	0	1
5.1	6.6	130	168	1	
6.6	7.9	168	201	2	
7.9	9.2	201	234	3	
9.2	10.5	234	267	4	
10.4	11.7	264	297	5	
11.6	12.9	295	328	6	
12.8	14.0	325	356	7	
13.9	15.2	353	386	8	
15.1	16.3	384	414	9	
16.2	17.5	411	445	10	
17.3	18.6	439	472	11	
18.4	19.7	467	500	12	
19.5	20.8	495	528	13	
20.6	21.9	523	556	14	

Table 7 MapSCANNER sizing chart *(continued)*

MIN (in.)	MAX (in.)	MIN (mm)	MAX (mm)	QUICKLINKS	DOVETAIL QUICKLINK
21.7	23.0	551	584	15	1
22.8	24.1	579	612	16	
23.9	25.2	607	640	17	
25.0	26.3	635	668	18	
26.1	27.4	663	696	19	
27.2	28.5	691	724	20	
28.2	29.5	716	749	21	
29.3	30.6	744	777	22	
30.4	31.7	772	805	23	
31.5	32.8	800	833	24	
32.6	33.9	828	861	25	
33.6	35.0	853	889	26	
34.7	36.0	881	914	27	
35.8	37.1	909	942	28	
36.9	38.2	937	970	29	
38.0	39.3	965	998	30	

Appendix B: Chain Link Model Spare Parts

To order accessories or replacement parts for your MapSCANNER system, contact Evident.

NOTE

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

B.1 MapSCANNER-Link Frame

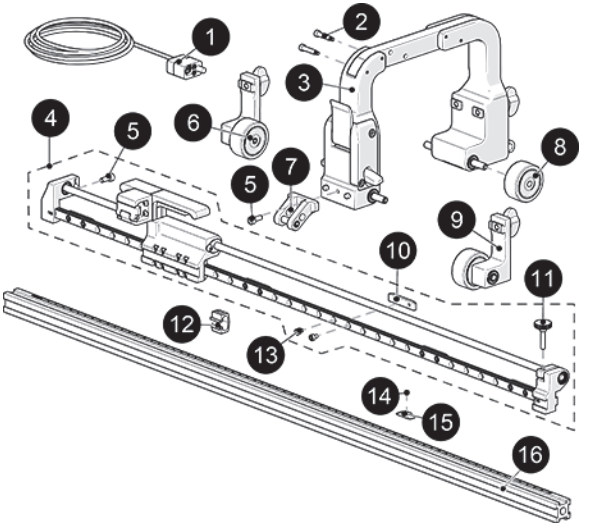


Figure B-1 MapSCANNER frame parts

Table 8 MapSCANNER frame parts

ID	Part number	Description
1	Q8300613	Index encoder
2	Q8300615	Shoulder screw
3	Q8300614	Encoded frame arch
4	Q8300616	Slider assembly
5	Q8300568	SHCS, M4 × 0.7 × 8 mm, SST
6	Q8300617	Stabilizer wheel, left
7	Q8302802	QuickLink tail
8	U8775189	Non-magnetic wheel

Table 8 MapSCANNER frame parts *(continued)*

ID	Part number	Description
9	Q8300618	Stabilizer wheel, right
10	Q8300601	Dovetail nut
11	Q8300619	Leadscrew clamp knob
12	Q8300620	Cable clip
13	Q8300621	Screw, M3 × 4.5 SHCS, 3 mm
14	Q8300622	Set screw
15	Q8300623	Index nut
16	Q8300624	Frame bar with ruler, 75 cm (3.0 in.)

B.2 Kit Components

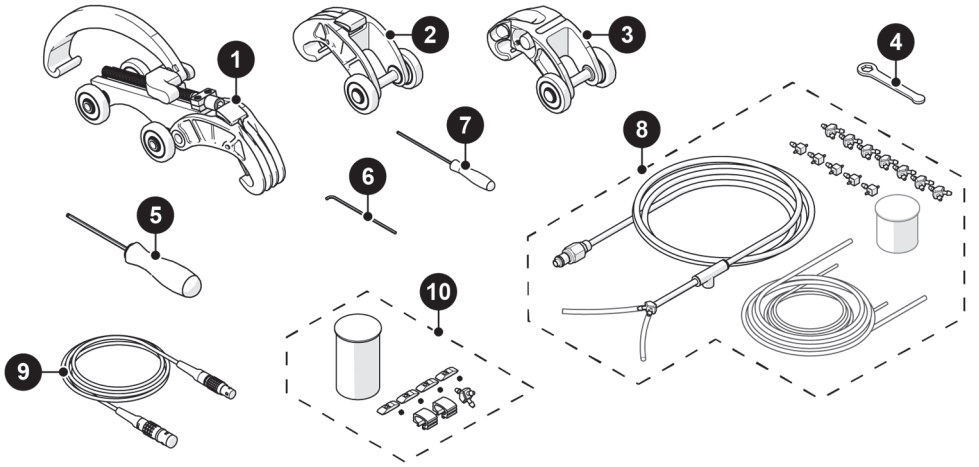


Figure B-2 Kit components

Table 9 Kit components

BOM ID	Part #	Description
1	Q8302812	QuickLink buckle
2	Q8302810	QuickLink
3	Q8302809	Dovetail QuickLink
4	Q8301359	10 mm (3/8 in) wrench
5	Q8300559	Hex driver, 3 mm
6	Q8302818	Short 2 mm hex wrench
7	Q8302819	Hex Driver: 2 mm
8	Q8302807	Irrigation kit, 2-4 probe
9	Q8300608	Encoder cable
10	Q8302820	Spare parts kit

Appendix C: Magnetic Model Spare Parts

To order accessories or replacement parts for your MapSCANNER system, contact Evident.

NOTE

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

C.1 Magnetic Model Parts

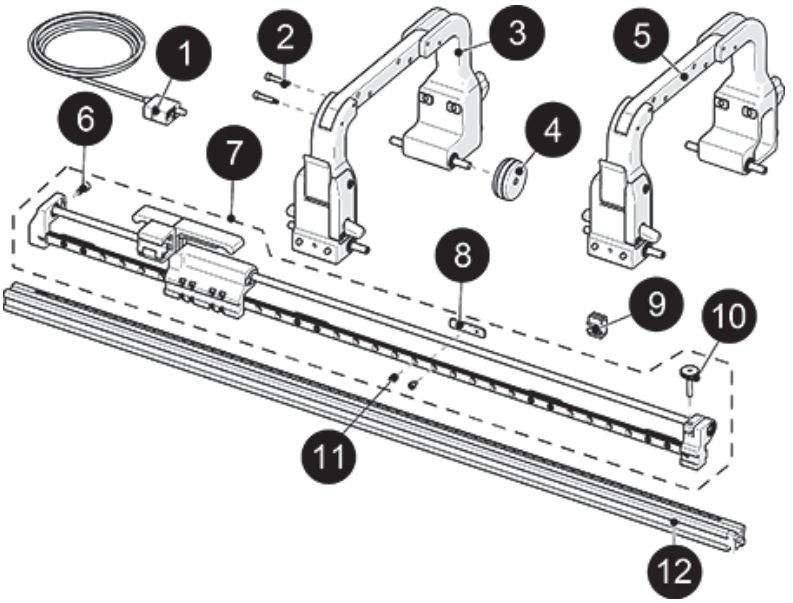


Figure C-1 Magnetic model parts

Table 10 Magnetic model parts

ID	Part number	Description
1	Q8300613	Index encoder
2	Q8300615	Shoulder screw
3	Q8300614	Encoded frame arch
4	U8779383	Magnetic wheel
5	Q8300632	Non encoded frame arch
6	Q8300568	SHCS, M4 × 0.7 × 8 mm, SST
7	Q8300616	Slider assembly

Table 10 Magnetic model parts *(continued)*

ID	Part number	Description
8	Q8300620	Dovetail nut
9	Q8300668	Cable clip
10	Q8302815	Leadscrew clamp knob
11	Q8300621	Screw, M3 × 4.5 SHCS, 3 mm
12	Q8300624	Frame bar with ruler, 75 cm (3 in.)

C.2 Magnetic Model Kit Components

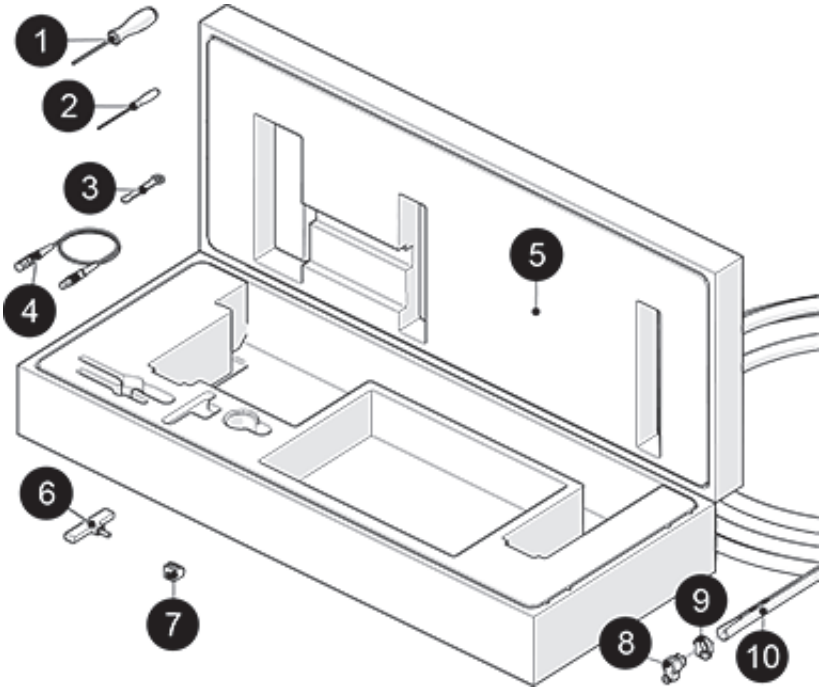


Figure C-2 Magnetic model kit components

Table 11 Magnetic model kit components

ID	Part number	Description
1	Q8300559	3 mm hex driver
2	Q8302819	2 mm hex driver
3	Q8301359	3/8 in. wrench
4	Q8300608	Encoder cable
5	Q8300626	Magnetic MapSCANNER case
6	Q8300953	Large yoke
	Q8300596	Standard yoke
7	Q8301387	Dovetail mount
8	Q8302816	Zipper tube mount
9	Q8300554	Zipper tube clamp
10	Q7750093	Zipper tube

Appendix D: Accessories

D.1 Heavy Duty Probe Holder

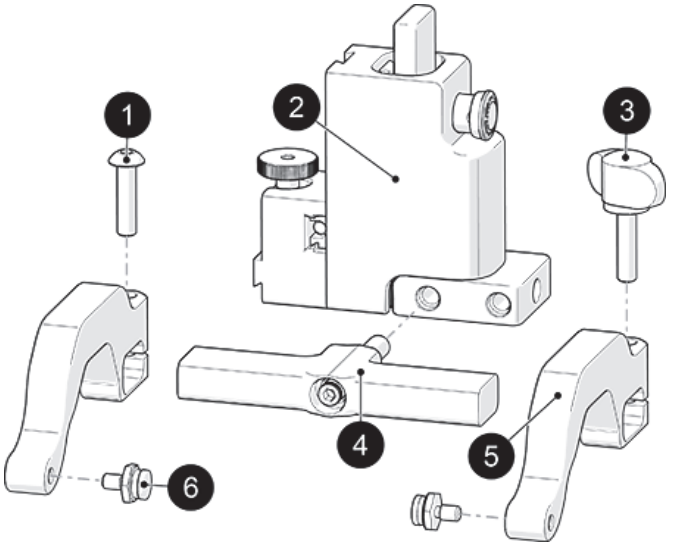


Figure D-1 Heavy duty probe holder

NOTE

The part number for the standard yoke version of the heavy duty probe holder assembly is Q7750122.

Table 12 Heavy duty probe holder

ID	Part number	Description
1	Q8300592	Arm clamp screw, BHCS, M5 × 0.8 × 20 mm, SST
2	Q8300593	Heavy duty probe holder subassembly
3	Q8300594	Probe holder arm adjustment knob
4	Q8300596	Standard yoke
	Q8300953	Wide yoke
5	Q8300595	Probe holder arm
6	U8775198	Pivot button for PA wedge, 8 mm (0.31 in.)
	U8775199	Pivot button for TOFD wedge, 5 mm (0.20 in.)

D.2 Pre-Amp Bracket (Optional)

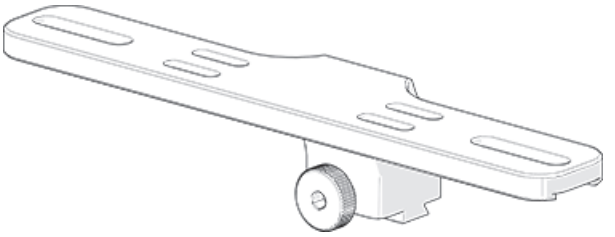


Figure D-2 Pre-amp bracket

Table 13 Pre-amp bracket

Part number	Description
Q7201260	Pre-amp bracket with velcro

D.3 Small Carriage for the First-Generation HydroFORM Scanner

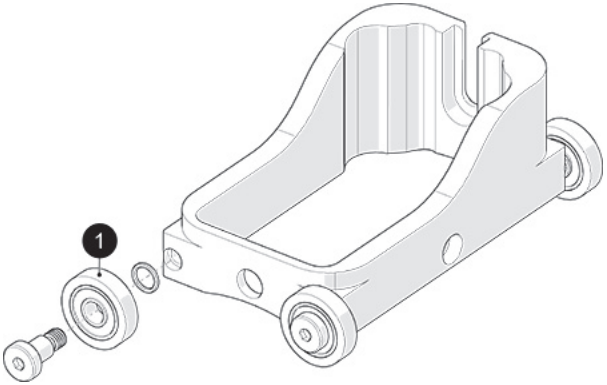


Figure D-3 Wheel replacement

Table 14 Carriage for first-gen. HydroFORM scanner (P/N: Q7750091)

Part number	Description
Q7750091	Carriage for first generation HydroFORM scanner
Q8300612	Urethane molded wheel bearing

D.4 Small Carriage for the Second-Generation HydroFORM Scanner

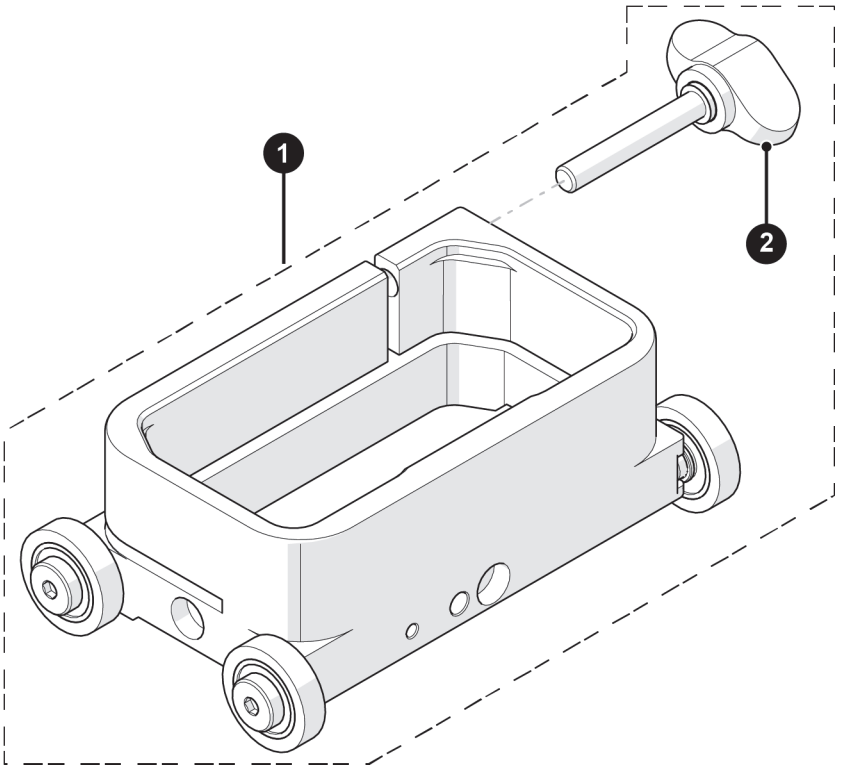


Figure D-4 Small carriage for second gen. HydroFORM scanner

Table 15 Small carriage

BOM ID	Part #	Description
1	Q7750240	Small cart assembly
2	Q8302823	Mini wing knob assembly

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