MapSCANNER

User's Manual

DMTA-20091-01EN — Rev. D
September 2022

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.

Part number: DMTA-20091-01EN
Rev. D
September 2022

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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 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 symbols 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, which, 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, which, 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 an operating procedure, practice, or the like, which, 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, which 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 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.

Battery Precautions

CAUTION

- Before disposing of a battery, check your local laws, rules, and regulations, and follow them accordingly.

- Transportation of lithium-ion batteries is regulated by the United Nations under the United Nations Recommendations on the Transport of Dangerous Goods. It is expected that governments, intergovernmental organizations, and other international organizations shall conform to the principles laid down in these regulations, thus contributing to worldwide harmonization in this field. These international organizations include the International Civil Aviation organization (ICAO), the International Air Transport Association (IATA), the International Maritime Organization (IMO), the US Department of Transportation (USDOT), Transport Canada (TC), and others. Please contact the transporter and confirm current regulations before transportation of lithium-ion batteries.
- For California (USA) only:

  The device may contain a CR battery. The CR battery contains perchlorate material, and special handling may be required. Refer to http://www.dtsc.ca.gov/hazardouswaste/perchlorate.
- Do not open, crush, or perforate batteries; doing so could cause injury.
- Do not incinerate batteries. Keep batteries away from fire and other sources of extreme heat. Exposing batteries to extreme heat (over 80 °C) could result in an explosion or personal injury.
- Do not drop, hit, or otherwise abuse a battery, as doing so could expose the cell contents, which are corrosive and explosive.
- Do not short-circuit the battery terminals. A short circuit could cause injury and severe damage to a battery making it unusable.
- Do not expose a battery to moisture or rain; doing so could cause an electric shock.
- Only use an external charger approved by Evident to charge the batteries.
- Only use batteries supplied by Evident.
- Do not store batteries that have less than 40 % remaining charge. Recharge batteries to between 40 % and 80 % capacity before storing them.
- During storage, keep the battery charge between 40 % and 80 %.
- Do not leave batteries in the MapSCANNER unit during device storage.

Regulations for Shipping Products with Lithium-Ion Batteries

IMPORTANT

When shipping a Li-ion battery or batteries, be sure to follow all local transportation regulations.

WARNING

Damaged batteries cannot be shipped through normal routes — DO NOT ship damaged batteries to Evident. Contact your local Evident representative or material disposal professionals.

Equipment Disposal

Before disposing of the MapSCANNER, 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 Community)

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	×	○	○	○	○	○

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)
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-MR/MapSCANNER-CW

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 CANADA, INC.

Address:

3415, Rue Pierre-Ardouin, Québec (QC) G1P 0B3 Canada

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 Terms and Conditions available at https://www.olympus-ims.com/en/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.

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 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 inch)	N/A
Index Encoder resolution	40.31 counts per mm (1023.9 counts per inch)	N/A

a. 101.6 mm (4.0 in.) diameter scanning is only possible when using the reduced width of the corrosion link (see “Corrosion Link Adjustment” on page 45).

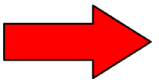
Operating Environment

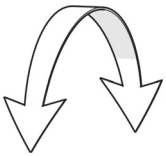
The MapSCANNER is designed for use in an industrial environment that is between -20 °C (-4 °F) and 50 °C (122 °F).

Environmental Sealing

Dust tight, water tight (not submersible).

Definition of Symbols

	Instructions to “look here” or to “see this part”.
	Denotes movement. Instructing 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.

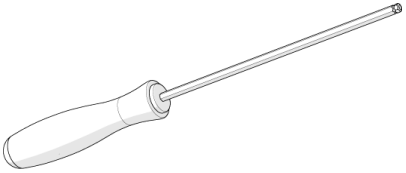


Figure i-1 2 mm hex driver

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

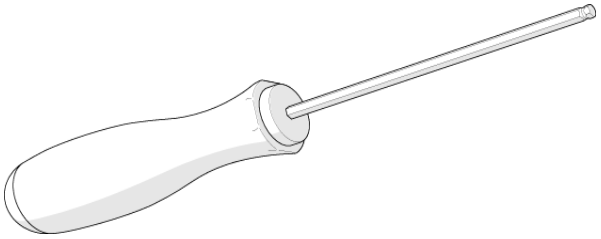


Figure i-2 3 mm hex driver

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

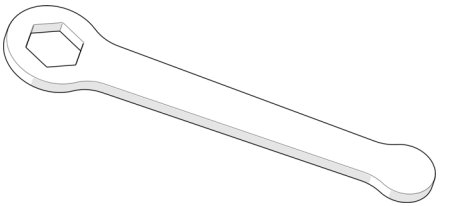


Figure i-3 3/8 inch wrench

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

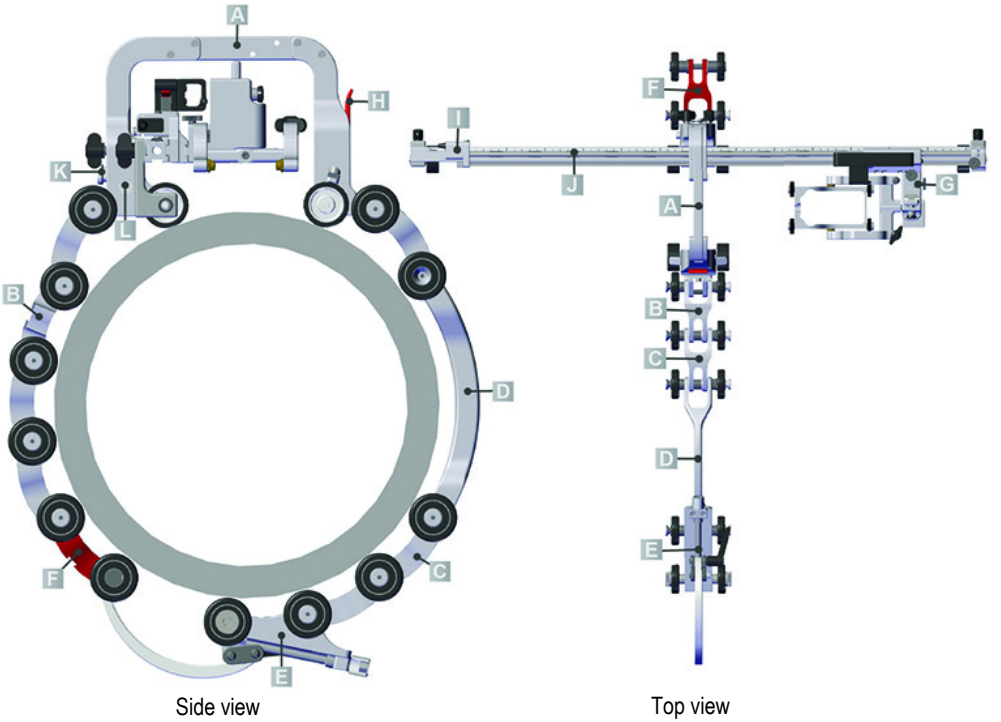


Figure 1-1 Chain link model key parts

Table 2 Chain link model key parts

ID	Description
A	Corrosion Link
B	Dovetail Link
C	Short Link
D	Long Link
E	Buckle
F	Catch Link
G	Heavy Duty Probe Holder
H	Brake
I	Index Encoder
J	Leadscrew
K	Encoder Connection
L	Raster Connection

Table 3 Chain link model setup chart

PIPE SIZE				LINKS	
MIN (in.)	MAX (in.)	MIN (mm)	MAX (mm)	SHORT	LONG
Short includes: Short link, dovetail link, and red catch link					
3.6	3.9	91	99	2	0
4.0	4.9	102	124	3	0
5.0	5.9	127	150	4	0
6.0	6.8	152	173	5	0
6.9	7.7	175	196	6	0
7.8	8.6	198	218	7	0
8.7	9.5	221	241	8	0
9.5	10.4	241	264	9	0
39.4	40.3	1001	1024	10	0
11.4	12.2	290	310	8	1
12.2	13.0	310	330	9	1
13.0	13.8	330	351	10	1
13.3	14.1	338	358	1	4
14.1	14.7	358	373	2	4
14.9	15.7	378	399	3	4
15.8	16.6	401	422	1	5
16.5	17.1	419	434	2	5
17.3	18.1	439	460	3	5
18.2	19.0	462	483	1	6
18.9	19.5	480	495	2	6
19.7	20.5	500	521	3	6
20.4	21.3	518	541	4	6
21.2	22.1	538	561	5	6
22.0	22.9	559	582	6	6
22.8	23.6	579	599	7	6
23.6	24.4	599	620	8	6
24.3	25.2	617	640	9	6
25.1	26.0	638	660	10	6
26.1	26.7	663	678	2	9
26.8	27.7	681	704	3	9
27.7	28.5	704	724	1	10
28.4	29.1	721	739	2	10
29.2	30.0	742	762	3	10
30.1	30.9	765	785	1	11
30.8	31.5	782	800	2	11
31.6	32.4	803	823	3	11
32.4	33.3	823	846	1	12
33.2	33.9	843	861	2	12
34.0	34.9	864	886	3	12
34.7	35.6	881	904	4	12
35.5	36.4	902	925	5	12
36.3	37.2	922	945	6	12
37.1	38.0	942	965	7	12
37.9	38.8	963	986	8	12
38.7	39.5	983	1003	9	12
39.4	40.3	1001	1024	10	12

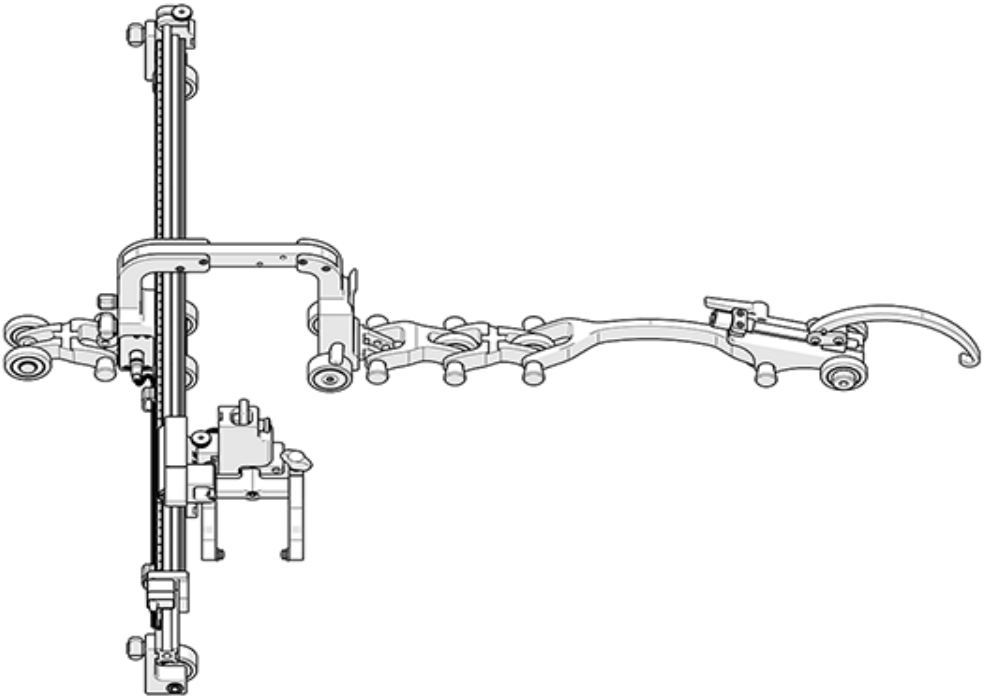


Figure 1-2 Center chain configuration

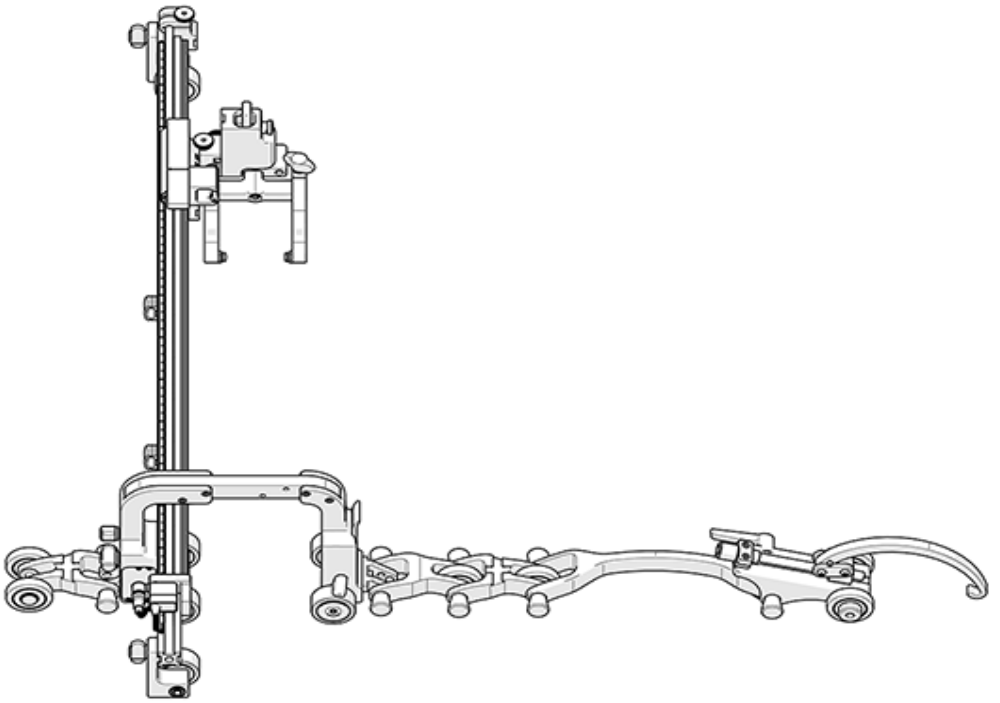


Figure 1-3 Cantilever chain configuration

1.2 Magnetic Model

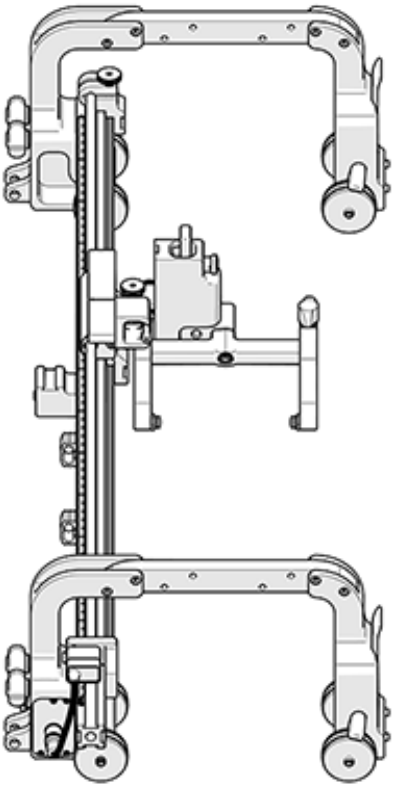


Figure 1-4 Magnetic model standard configuration

2. Operation

2.1 Chain Link Model

1. Determine the diameter of the pipe or tube to be scanned.

   A setup chart is included in this manual (see Table 3 on page 29). The chart indicates the number of links required based on the diameter of the pipe or tubing (see Figure 2-1 on page 33).

Figure 2-1 Setup chart

NOTE

The following example assumes a 26.7 cm (10.5 in.) pipe diameter

2. Ensure the appropriate configuration (see Figure 2-2 on page 34).
3. Install the wedge in the probe holder (see “Probe Holder Setup” on page 56).

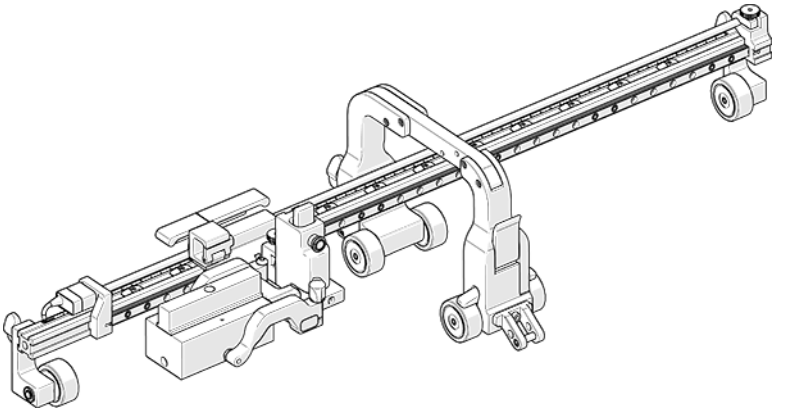


Figure 2-2 Assembly configuration — no links attached

4. On a flat surface, connect the appropriate number of links.

   See Table 3 on page 29 to determine the appropriate number of links. See “Chain Connection” on page 69 for instructions on how to connect the links.
5. Arrange the link setup with the buckle and catch link 180° opposite of the corrosion link (Figure 2-3 on page 35).

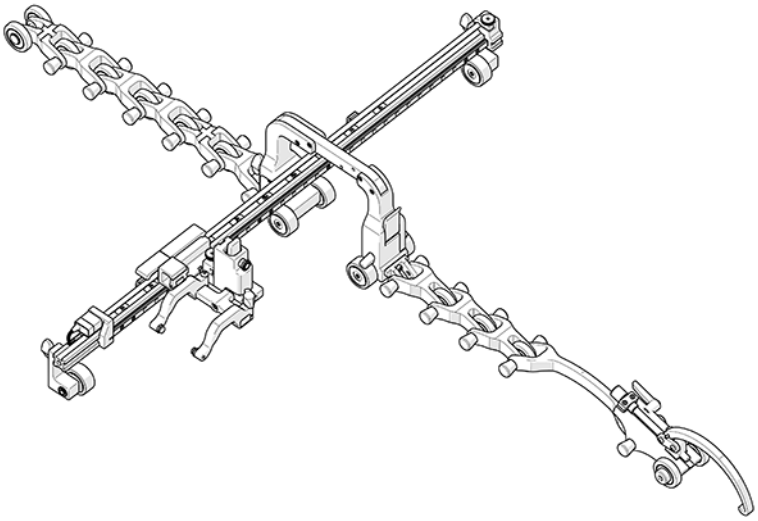


Figure 2-3 Assembly configuration — links attached

6. Place the dovetail link 2nd in the chain after the corrosion link (see Figure 2-4 on page 36).
7. Ensure the brake is activated.

   See “Brake” on page 50 for instructions on activating the brake.
8. Drape the configured chain assembly around pipe or tube to be inspected (see Figure 2-4 on page 36).

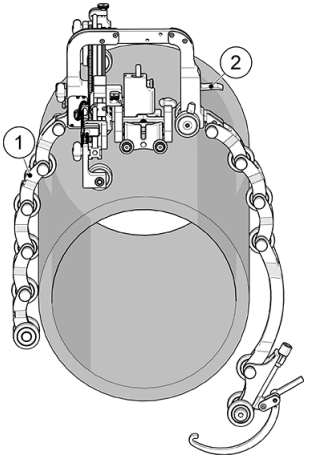


Figure 2-4 Dovetail link (1), brake (2)

9. Bring the buckle arm towards the catch link (see Figure 2-5 on page 36).
10. Hook the buckle arm to the middle axle of the catch link.

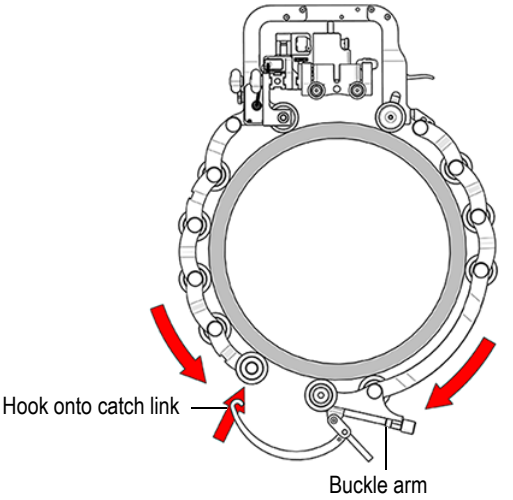


Figure 2-5 Hook buckle arm to catch link

11. If necessary, loosen the buckle adjustment knob and the buckle lever to allow the arm to reach the catch link (see Figure 2-6 on page 37).

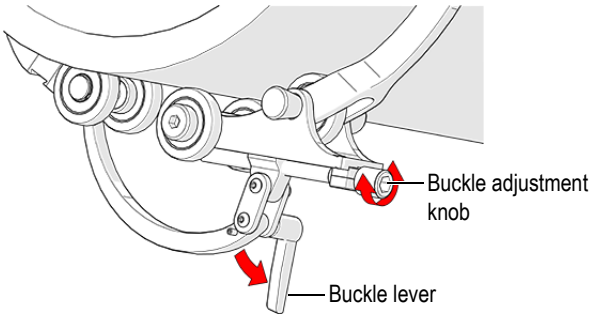


Figure 2-6 Buckle pressure adjustment

12. Rotate the buckle adjustment knob until you can push the buckle lever down and lock the buckle in place (see Figure 2-7 on page 37).
13. Adjust the MapSCANNER tightness on the pipe using the buckle adjustment knob.

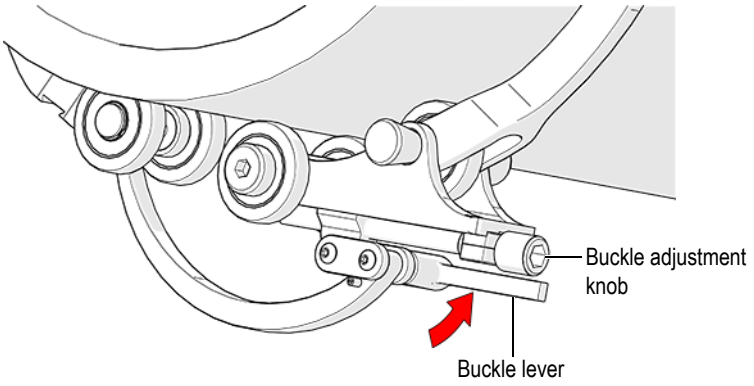


Figure 2-7 Locking the buckle in place

TIP

If additional clearance is required, the buckle ratchet lever can be pulled out and rotated to various positions (see “Ratchet Lever” on page 70).

14. Route all cabling and hoses (Encoder cable and sample irrigation tube shown) to the zipper tube.

    See “Cable Management System” on page 72 for instructions on cable routing.

15. Lower probe holders to the scan surface.

    See “Probe Holder Setup” on page 56 for instructions on setting up probe holders.

16. Release the brake to commence scanning.

    See “Brake” on page 50 for instructions on using the brake.

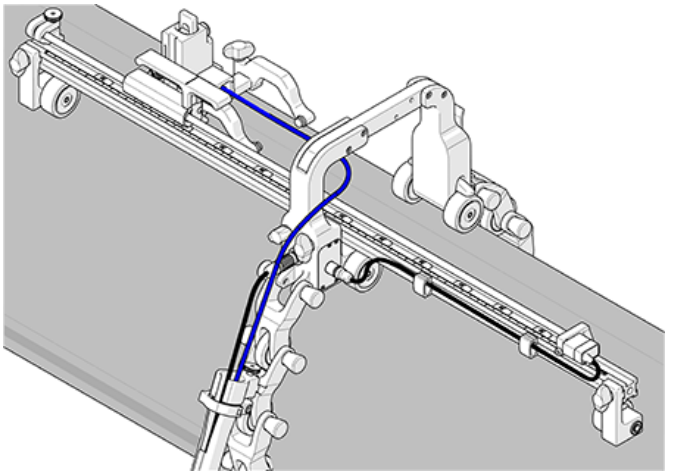


Figure 2-8 Cable and irrigation setup

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, observe the magnetic wheel safety precautions, as outlined in the warning note in “Safety Symbols” on page 8.

1. Ensure the appropriate configuration is setup (see Figure 2-9 on page 39).
2. Install the wedge to be used in the probe holder.

   See “Heavy Duty Vertical Probe Holder” on page 55 for instructions on using the probe holder.
3. Ensure the brakes are activated on both corrosion links.

   See “Brake” on page 50 for instructions on using the brake.

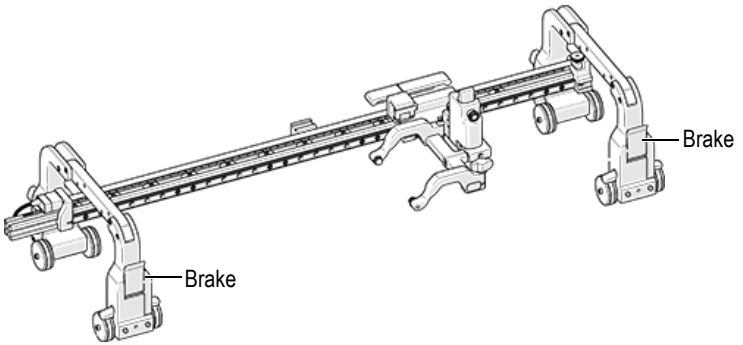


Figure 2-9 Configure magnetic scanner and set brakes

4. Place the MapSCANNER on the scanning surface (see Figure 2-10 on page 40).

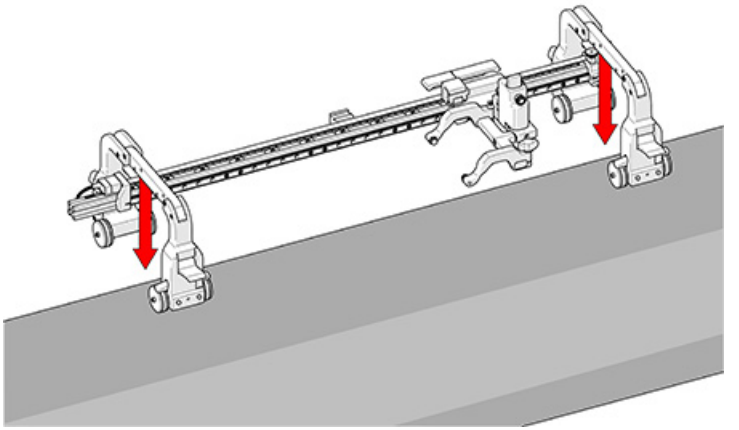


Figure 2-10 Placing magnetic scanner on scan surface

CAUTION

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

5. Ensure the frame bar extends past the corrosion link on the encoder side (see Figure 2-11 on page 41).

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

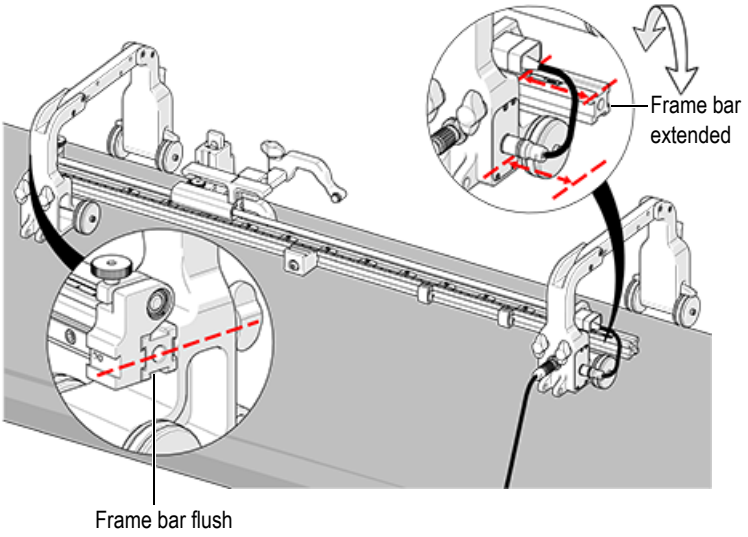


Figure 2-11 Setting the frame bar

3. System Components

3.1 Non-Encoded Corrosion Link (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, observe the magnetic wheel safety precautions, as outlined in the warning note in “Safety Symbols” on page 8.

The non-encoded corrosion link provides braking for the system (see Figure 3-1 on page 44). A mounting point for the frame bar is also provided.

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

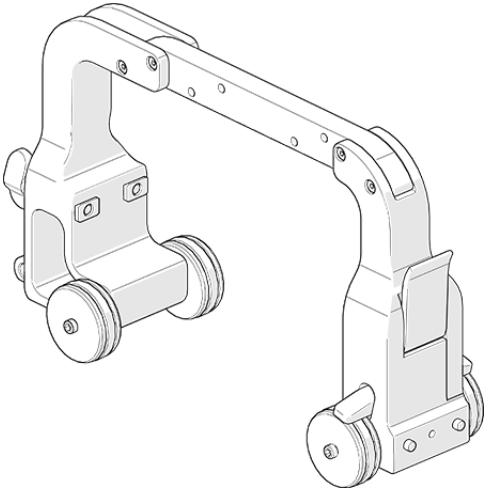


Figure 3-1 Non-encoded corrosion link

3.2 Corrosion Link

The corrosion link 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 corrosion link length can be adjusted to increase scanner diameter range as well as allowing for probe clearance (magnetic model only).

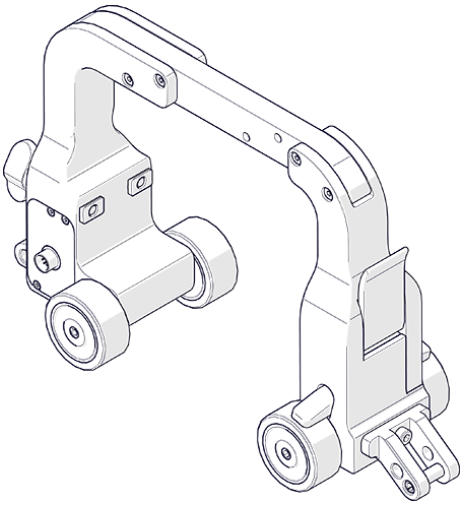


Figure 3-2 Corrosion link

3.2.1 Corrosion Link Adjustment

NOTE

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

1. Use the supplied 2 mm hex driver to remove the two shoulder screws (see Figure 3-3 on page 46).

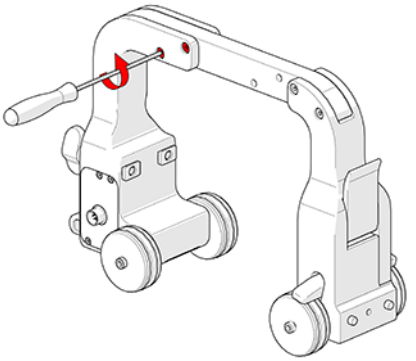


Figure 3-3 Remove shoulder screws

2. With the two shoulder screws removed, position the two halves of the corrosion link further apart and align the screw holes and insert the shoulder screws (see Figure 3-4 on page 46).

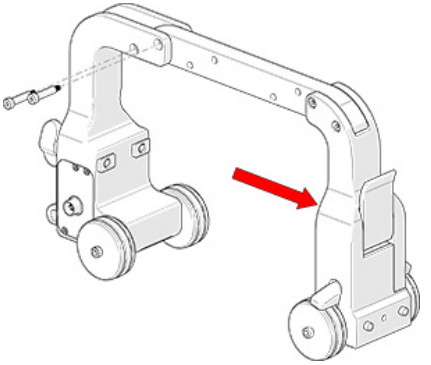


Figure 3-4 Align screw holes

3. Tighten the two shoulder screws with the supplied 2 mm hex driver (see Figure 3-5 on page 47).

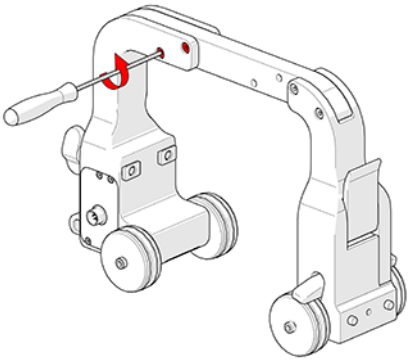


Figure 3-5 Tighten shoulder screws

3.2.2 Mounting a Frame Bar

Loosen the two wing knobs of the corrosion link and slide the frame bar along the dovetail nuts of the corrosion link (see Figure 3-6 on page 47).

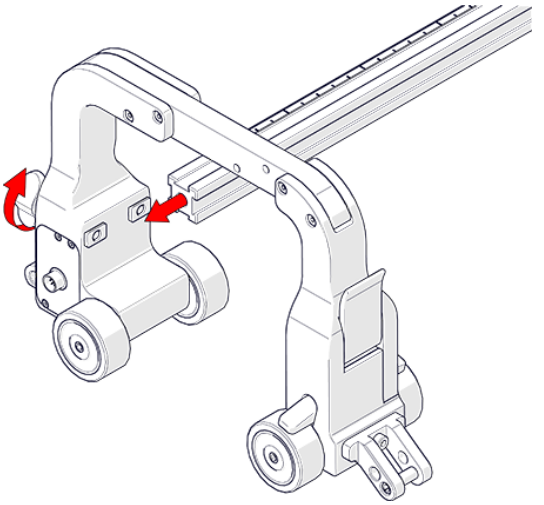


Figure 3-6 Wing knobs and frame bat

When the frame bar is positioned where appropriate, tighten the two wing knobs (see Figure 3-7 on page 48).

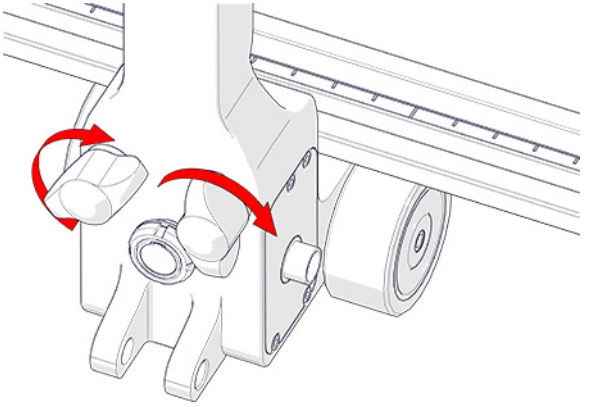


Figure 3-7 Wing knobs tightened

3.2.3 Index Encoder Connection (Chain Link Model Only)

The index encoder connection is located along the side of the corrosion link (see Figure 3-8 on page 48). The cable from the encoder connects to this point.

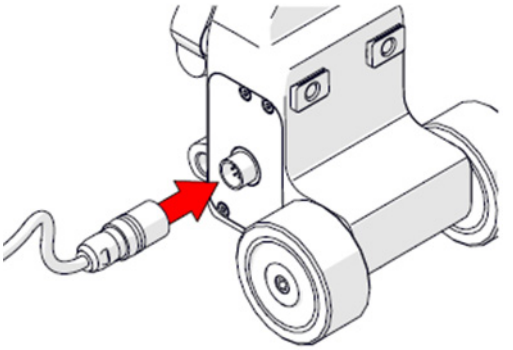


Figure 3-8 Index encoder connection

3.2.4 Encoder Connection

The encoder connection is located at the rear of the corrosion link (see Figure 3-9 on page 49). The encoder cable connects to this point. The opposite end of the encoder cable connects to your instrument.

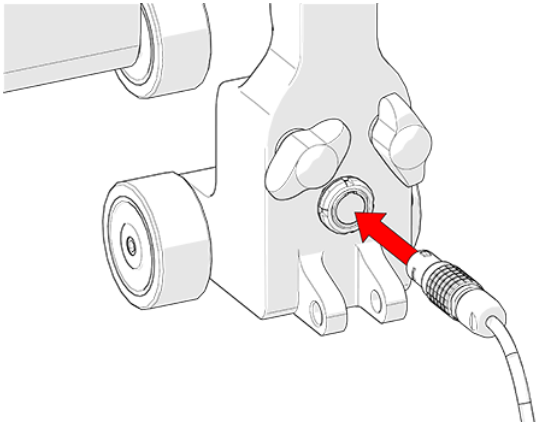


Figure 3-9 Encoder connection

3.2.5 Brake

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

- Press the lever down to activate the brake.

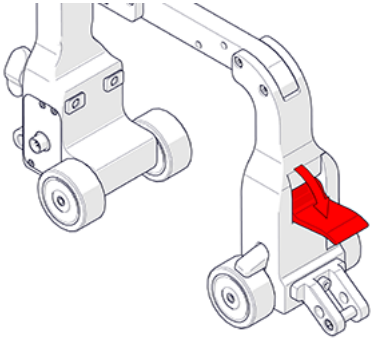


Figure 3-10 Brake

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 by hand. Using the supplied 3 mm hex driver, loosen the wheel from the axle (see Figure 3-11 on page 51).

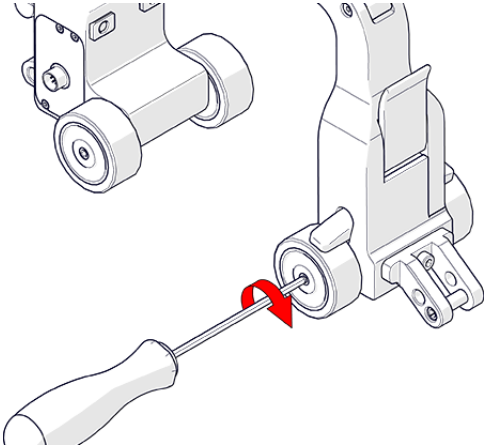


Figure 3-11 Wheel removal

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

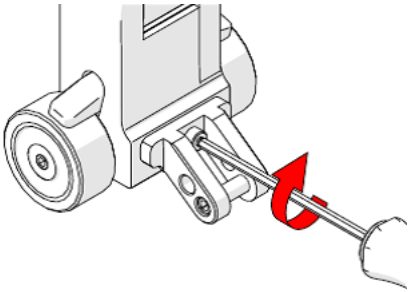


Figure 3-12 Tail

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 52).

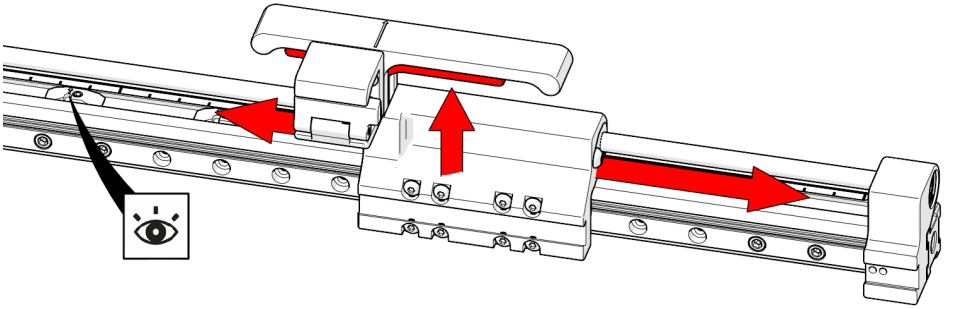


Figure 3-13 Carrier handle latch

3.2.9 Carrier Cable Clip

1. Push the cable clip flap down (see Figure 3-14 on page 52).

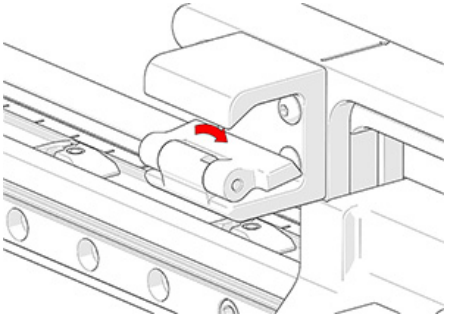


Figure 3-14 Carrier cable clip flap

2. Insert the necessary cables and hoses (see Figure 3-15 on page 53).

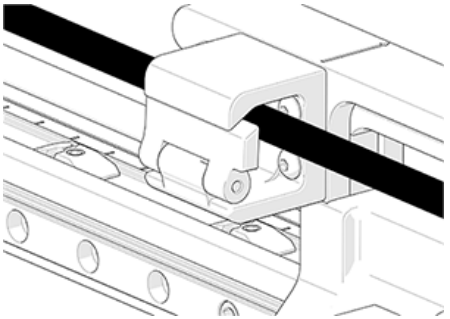


Figure 3-15 Carrier cable clip

3.2.10 Index Nuts

The index nuts located along the frame bar offer index positions during scans (see Figure 3-16 on page 53). The arrow on each nut confirms alignment with the ruler on the frame bar.

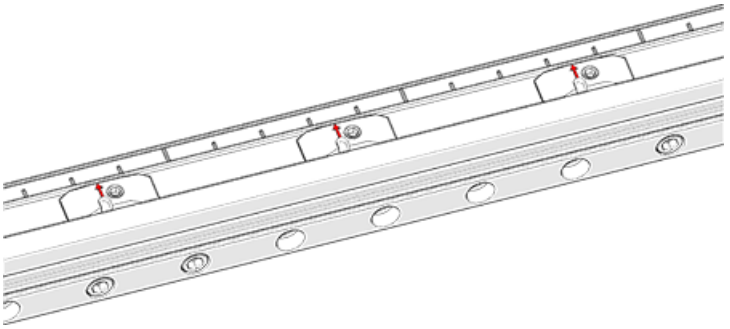


Figure 3-16 Index nuts

NOTE

The index nuts can be repositioned (see Figure 3-17 on page 54). Placement of the index nuts works in conjunction with common probe specifications. Excessive adjustment of the index nuts is not recommended.

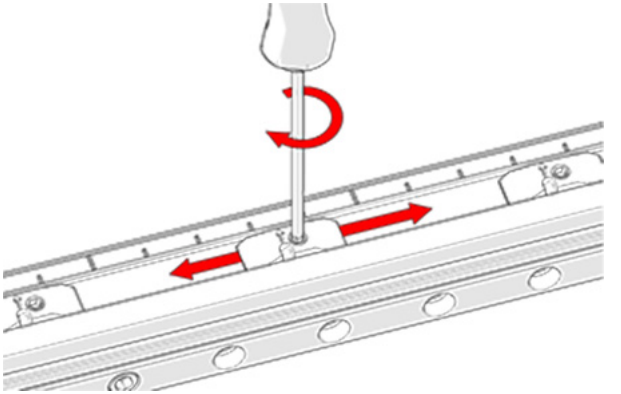


Figure 3-17 Position index nuts

3.3 Heavy Duty Vertical Probe Holder

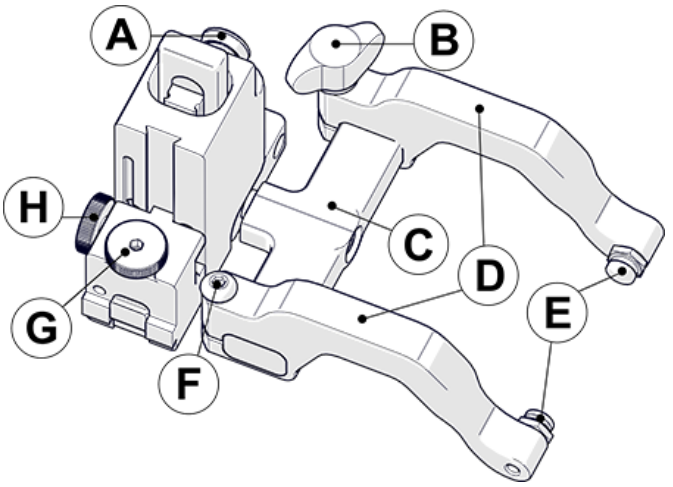


Figure 3-18 Heavy duty vertical probe holder

Table 4 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 56).

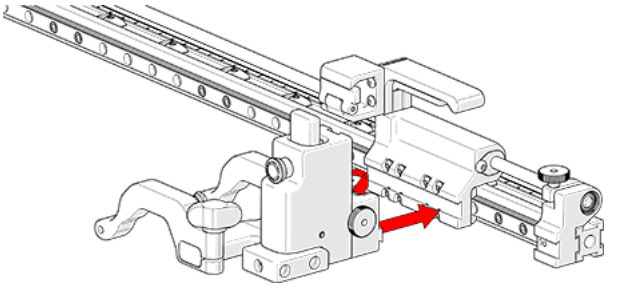


Figure 3-19 Mount probe holder to carrier

The vertical adjustment knob allows the heavy duty vertical probe holder height adjustment (see Figure 3-20 on page 56). This adjustment also controls the probe holders spring tension.

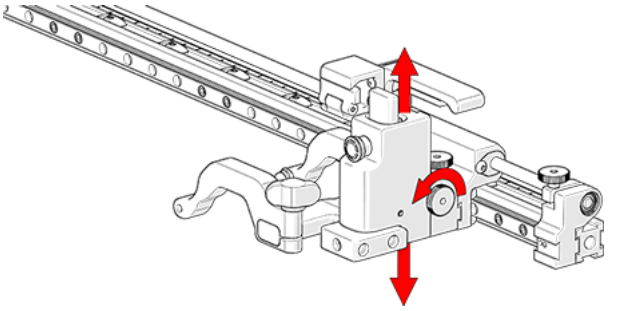


Figure 3-20 Vertical adjustment

2. Loosen the probe holder adjustment knob and remove the outer probe holder arm (see Figure 3-21 on page 57).

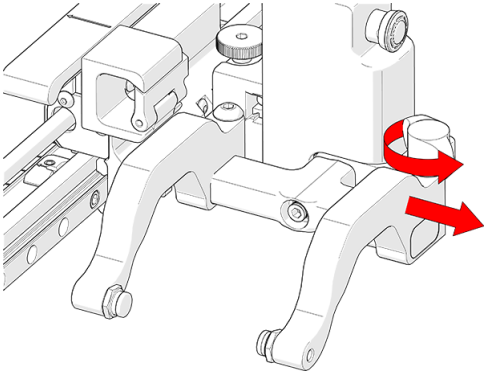


Figure 3-21 Remove outer arm

3. Loosen the arm clamp screw (see Figure 3-22 on page 57).
4. Place the wedge on the pivot button of the inner probe holder arm.

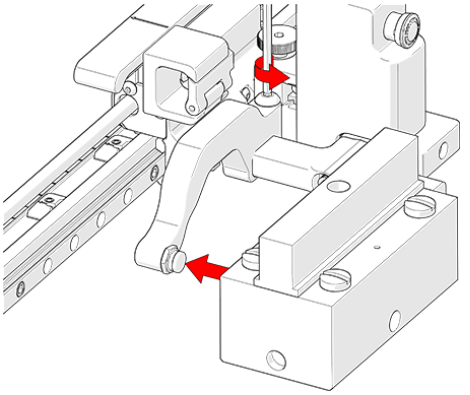


Figure 3-22 Adjust inner arm

5. Align the middle of the wedge with the center of the yoke (see Figure 3-23 on page 58).

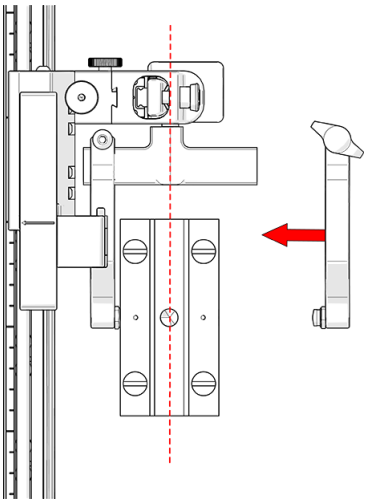


Figure 3-23 Reinstalling the outer arm

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 58).

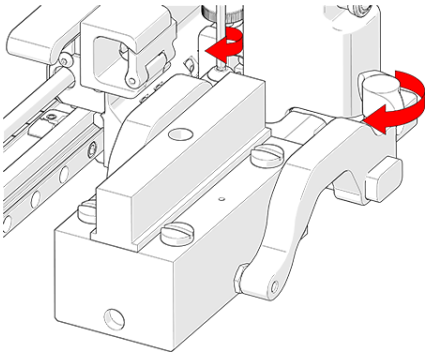


Figure 3-24 Tightening the arm screws

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 59).

   This action will unlock the probe holder.

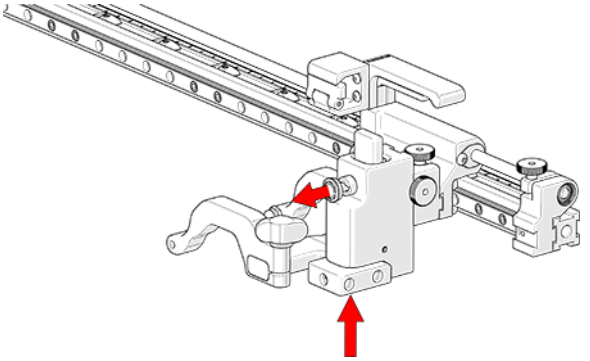


Figure 3-25 Press up and pull latch

2. Slowly lower the probe holder towards the scan surface (see Figure 3-26 on page 59).

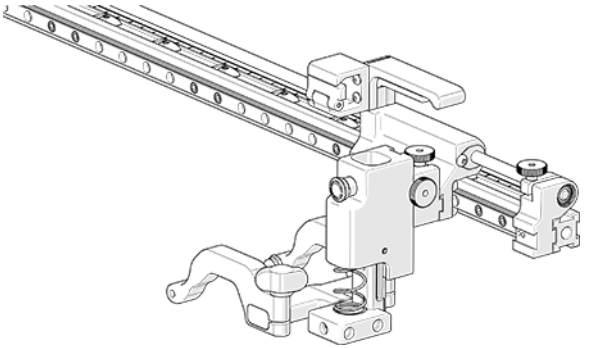


Figure 3-26 Lowered toward scan surface

3.3.3 Probe Holder Left/Right Conversion

1. Using the supplied 3 mm driver, unscrew the yoke (see Figure 3-27 on page 60).

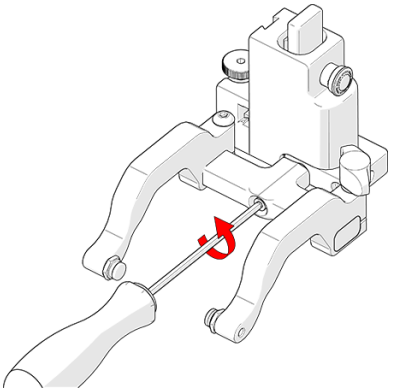


Figure 3-27 Remove yoke

2. Position the yoke and arms to the opposite side of the probe holder (see Figure 3-28 on page 60).

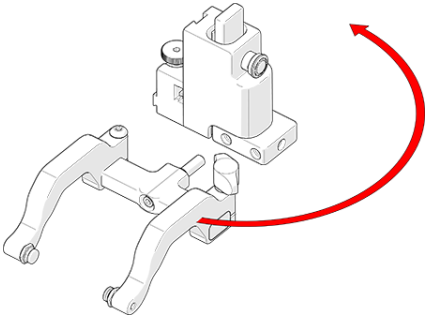


Figure 3-28 Orient to opposite side

3. Loosen the arm clamp screw and the probe holder arm adjustment knob allowing removal of the probe holder arms (see Figure 3-29 on page 61).

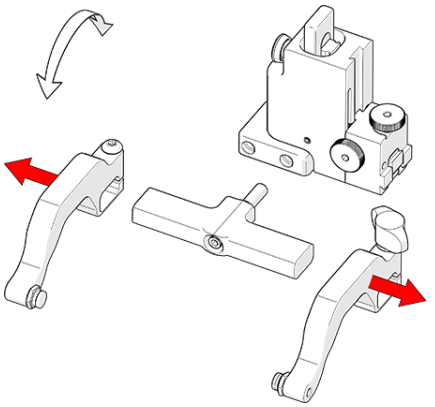


Figure 3-29 Remove probe holder arms

4. Position the removed arms to the opposite sides of the yoke (see Figure 3-30 on page 61).

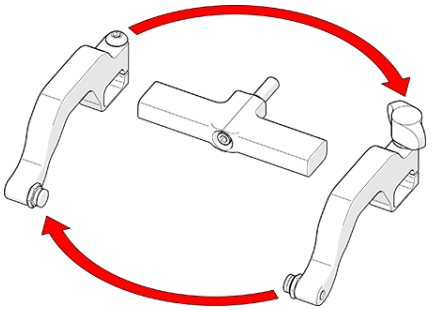


Figure 3-30 Reverse position around yoke

5. Position the pivot buttons to the inside of the probe holder arms (see Figure 3-31 on page 62).

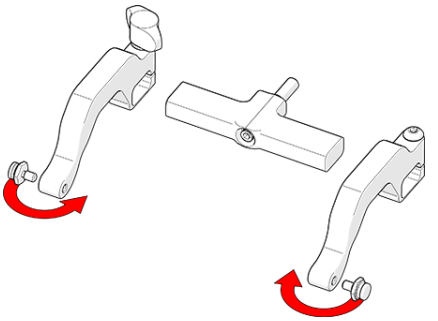


Figure 3-31 Position pivot buttons

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 63).

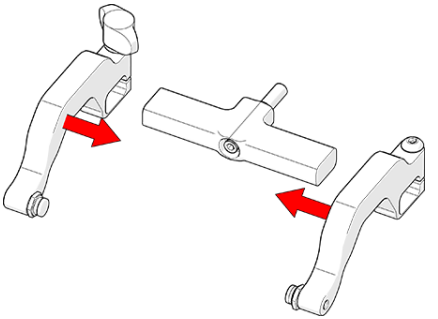


Figure 3-32 Place arms back onto yoke

Use the supplied 3 mm driver to screw the yoke to the probe holder (see Figure 3-33 on page 63).

TIP

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

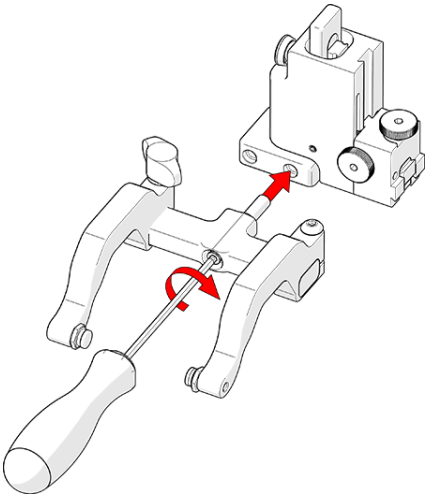


Figure 3-33 Screw into threaded hole

3.3.4 Probe Holder 90° Adjustment

1. Remove the yoke using the supplied 3 mm hex driver (see Figure 3-27 on page 60).
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 64).

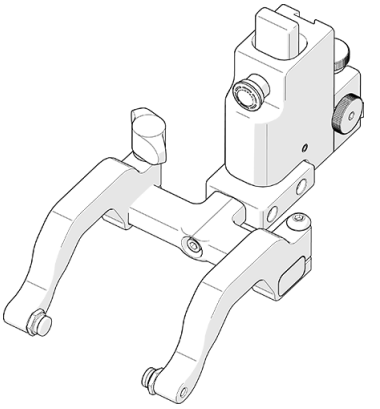


Figure 3-34 90° Probe holder positioning

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 64). The ruler can be used to assist with positioning of index nuts.

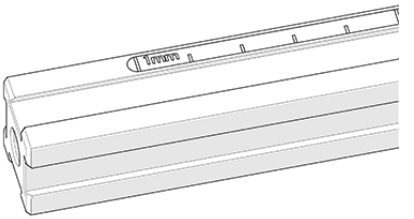


Figure 3-35 Frame bar

3.5 Pivot Buttons

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

- Use the supplied 3/8″ wrench (see Figure i-3 on page 24) to remove and install pivot buttons (see Figure 3-36 on page 65).

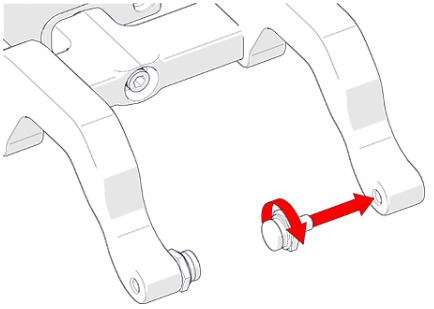


Figure 3-36 Pivot buttons

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 66).

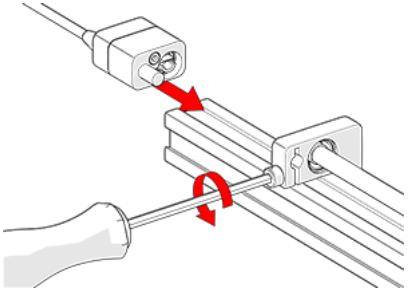


Figure 3-37 Loosen and slide post in place

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 66).

TIP

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

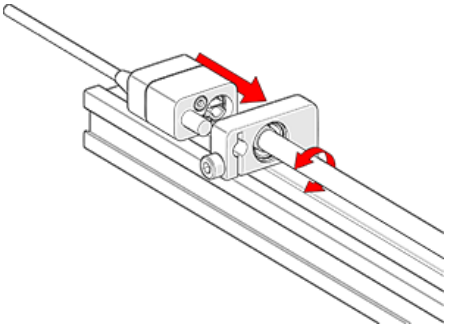


Figure 3-38 Align and mount post

3. Tighten the 3 mm clamp screw on the index encoder support bracket (see Figure 3-39 on page 67).

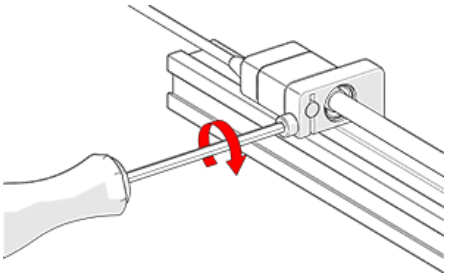


Figure 3-39 Tighten clamp screw

4. Route the cable along the frame bar using the cable clips (see Figure 3-40 on page 67).
5. Plug the index encoder connector to the corrosion link.

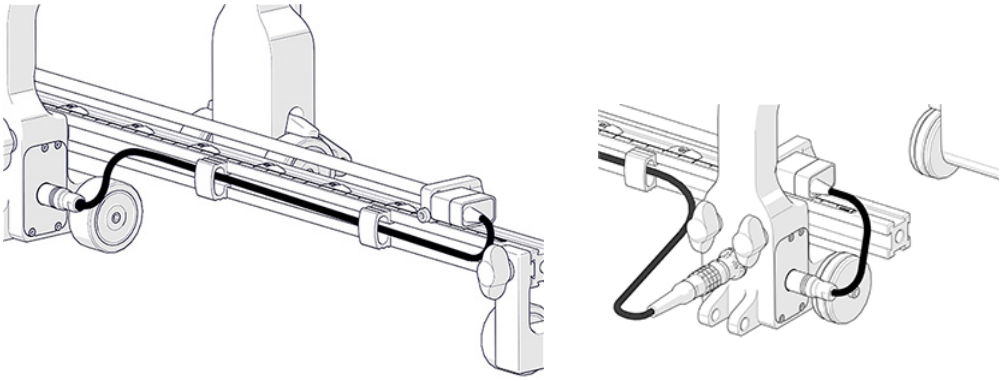


Figure 3-40 Connect the index encoder to the corrosion link

3.7 Chain Components (Chain Link Model)

The chain components are used to fasten a scanning cart circumferentially around a pipe or tubing (see Figure 3-41 on page 68).

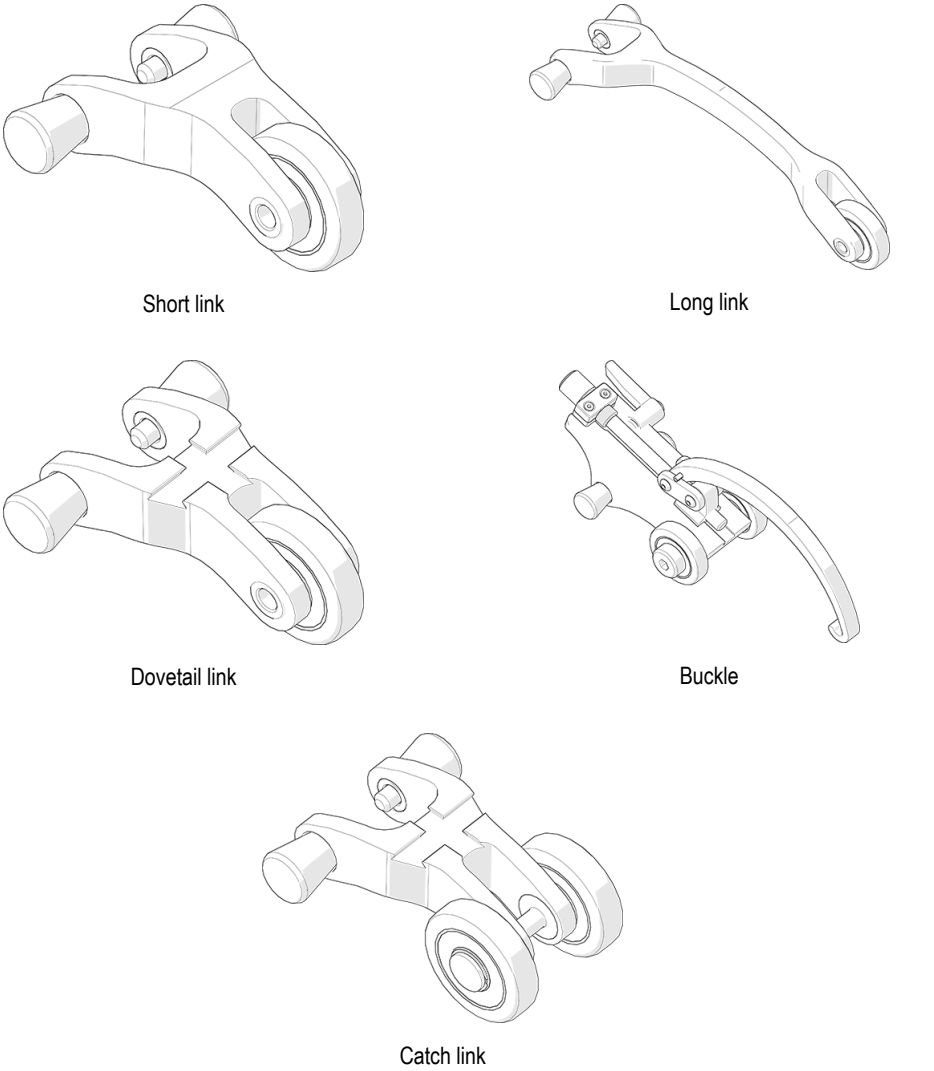


Figure 3-41 Chain components

3.7.1 Chain Connection

To connect chain components

1. Pull the pins out from the wheels, twist a quarter turn latching the pins in a retracted state (see Figure 3-42 on page 69).

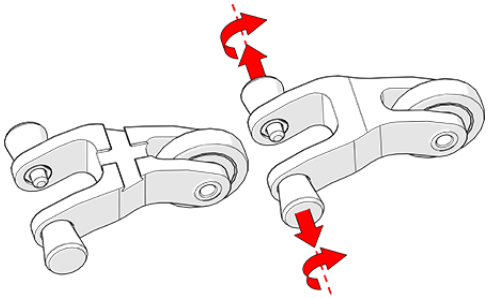


Figure 3-42 Pull out and twist pins

2. Align the pins with the mounting holes of the component to be connected (see Figure 3-43 on page 69).

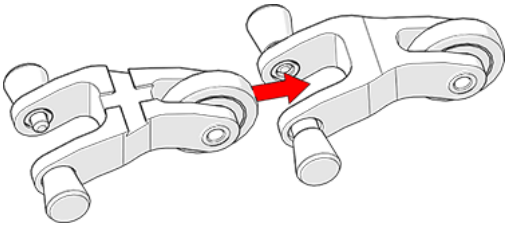


Figure 3-43 Align mounting holes

3. Twist the pins until they unlatch and extend into the hole of the connected component (see Figure 3-44 on page 70).

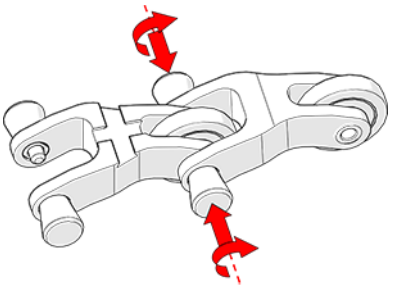


Figure 3-44 Release pins

3.7.2 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 of which it is connected (see Figure 3-45 on page 70).

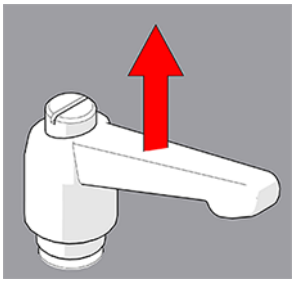


Figure 3-45 Pull ratchet handle

2. Continue to pull while rotating the lever in the appropriate direction (see Figure 3-46 on page 71).

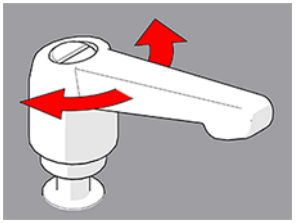


Figure 3-46 Rotate handle

3. Release the lever and utilize the new tightening position (see Figure 3-47 on page 71).

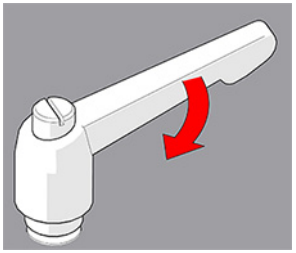


Figure 3-47 Tighten handle

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 72).

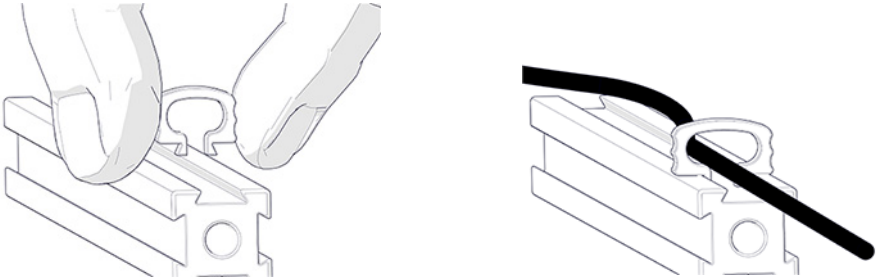


Figure 3-48 Pinch clip and routed cable

3.9 Cable Management System

TIP

When using the zipper tube, ensure the dovetail link is placed 2nd in the chain behind the overhead adjustable link (see Figure 3-49 on page 72).

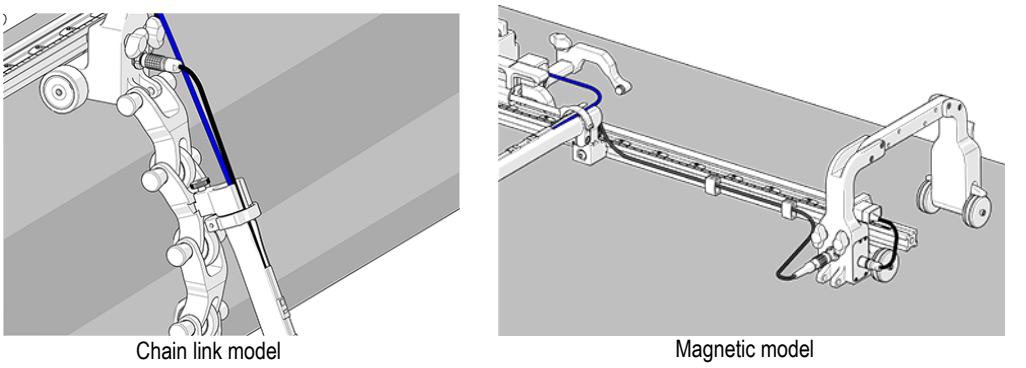


Figure 3-49 Cable management

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 73).

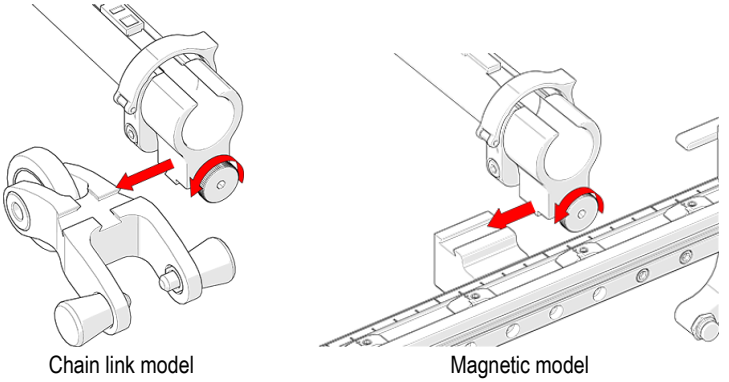


Figure 3-50 Loosen and slide on

2. Once centered on the dovetail link, tighten the zipper tube's dovetail mount knob (see Figure 3-51 on page 73).

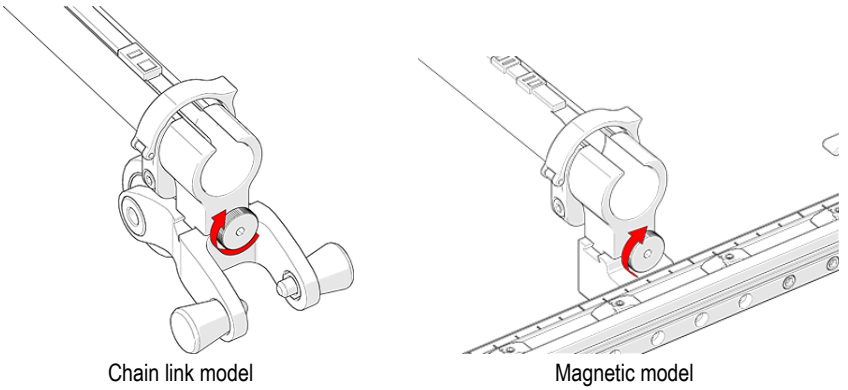


Figure 3-51 Tighten knob

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 74).

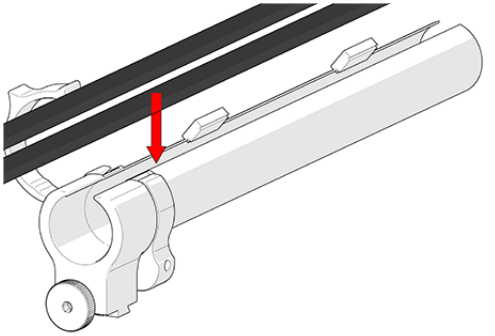


Figure 3-52 Insert cables and hoses

2. Follow the cable placement zipping the tube closed and closing the zipper tube cable clip (see Figure 3-53 on page 74).

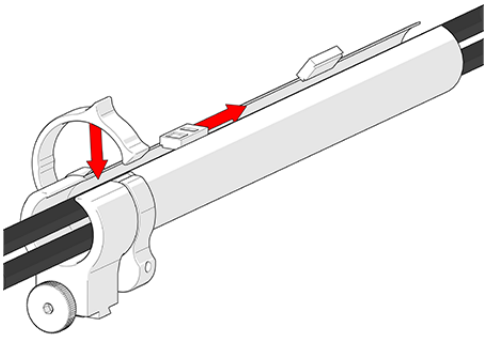


Figure 3-53 Zip up to close

3. Once the cable is placed the entire length of tube, bring the zipper from the tubes opposite end, meeting at any point in the middle (see Figure 3-54 on page 75).

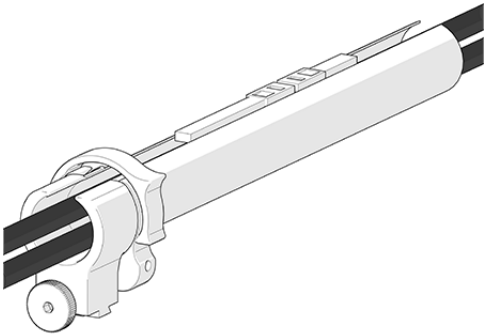


Figure 3-54 Zip opposite end

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 75).

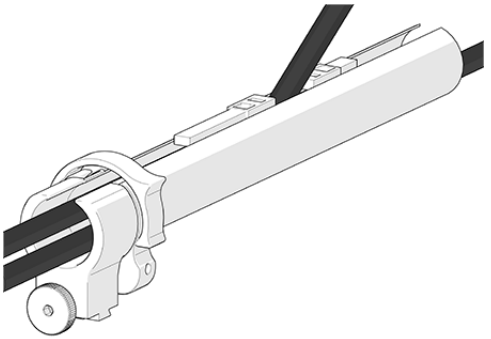


Figure 3-55 Flexibility

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. Loosen the clamp screw using the supplied 3 mm hex driver.
2. Slide the clamp around the tube first and then slide the tube around the outside of the zipper tube dovetail mount (see Figure 3-56 on page 76).

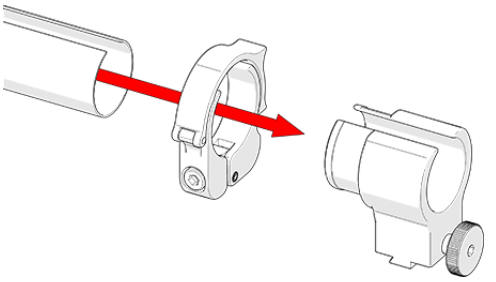


Figure 3-56 Slide tube around mount

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 76).

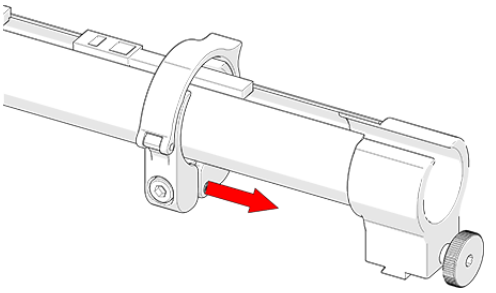


Figure 3-57 Slide clamp onto mount

5. Tighten the clamp screw (see Figure 3-58 on page 77).

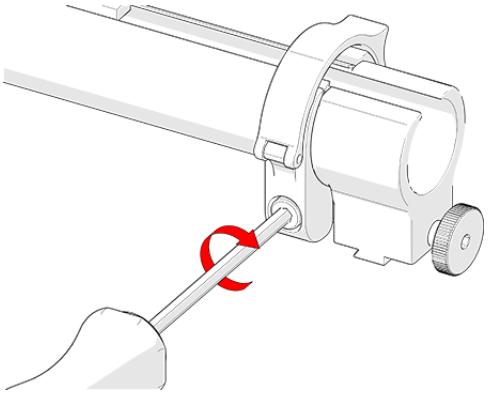


Figure 3-58 Tighten clamp screw

4. Troubleshooting

4.1 Chain Link Model

Table 5 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 ROTIX setup chart (see Table 3 on page 29) for the required number of links for the diameter of pipe or tube that is to be scanned. 2. Ensure 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 2-6 on page 37 and Figure 2-7 on page 37).
Insufficient probe contact	Scanner not set properly.	Reconfigure the scanner (see “Chain Link Model” on page 33).

For technical assistance (see “Technical Support” on page 19).

4.2 Magnetic Scanner

Table 6 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, observe the magnetic wheel safety precautions, as outlined in the warning note in “Safety Symbols” on page 8.

5. Specifications

Table 7 on page 81 contains general specifications for the MapSCANNER.

Table 7 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
	Weight	29.8 kg (65.7 lbs)
Magnetic wheels	Magnetic attraction	1 in. (2.54 cm) thick for a steel surface of 5.44 kg (12 lbs)

Appendix A: 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.

A.1 Chain Link Model Parts

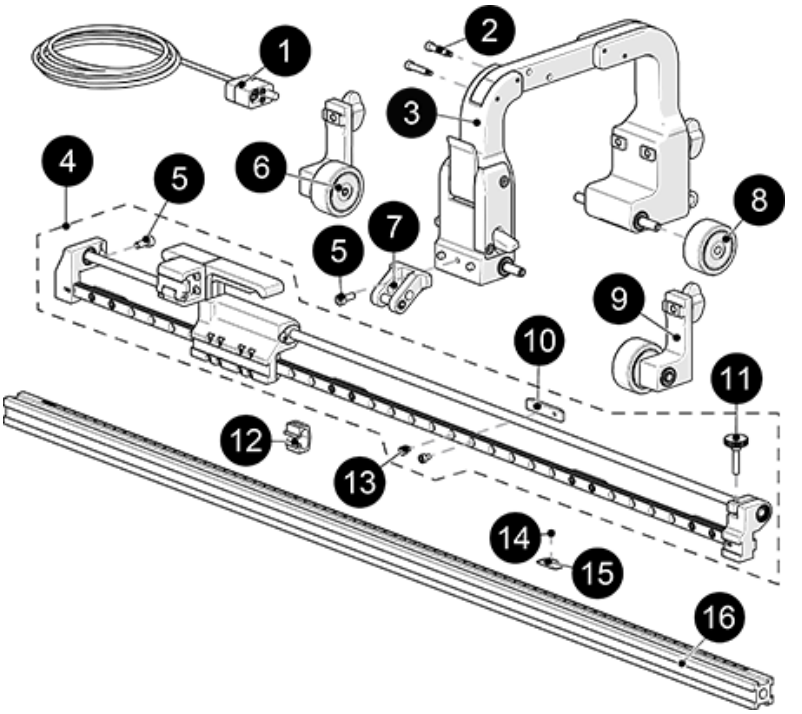


Figure A-1 Chain link model parts

Table 8 Chain link model 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

Table 8 Chain link model parts *(continued)*

ID	Part number	Description
6.	Q8300617	Stabilizer Wheel, Left
7.	U8831177	Tail
8.	U8775189	Non-Magnetic Wheel
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

A.2 Chain Link Model Kit Components

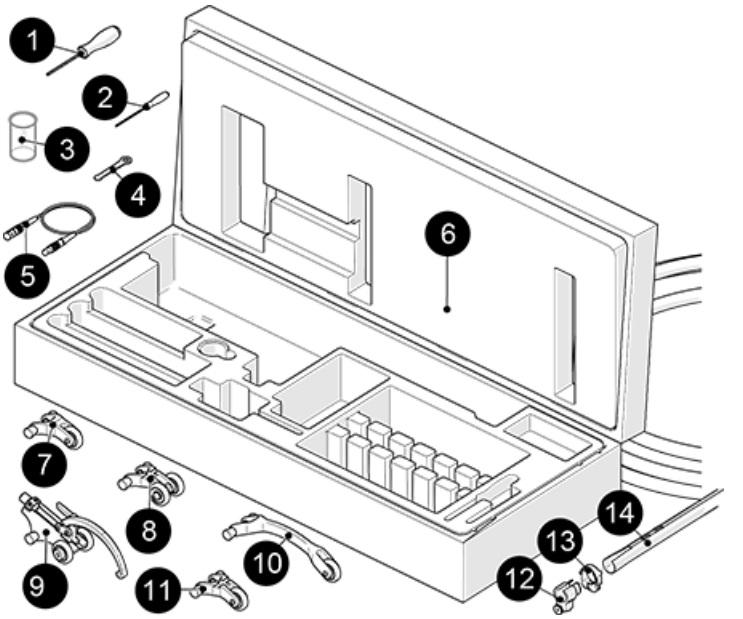


Figure A-2 Chain link model kit components

Table 9 Chain link model kit components

ID	Part number	Description
1.	Q8300559	3 mm Hex Driver
2.	Q8300606	2 mm Hex Driver
3.	Q8300625	Spare Parts Kit
4.	Q8300607	3/8 in. Wrench
5.	Q8300608	Encoder Cable
6.	Q8300626	Case for Chain Link MapSCANNER Model
7.	U8775127	Short Link

Table 9 Chain link model kit components *(continued)*

ID	Part number	Description
8.	U8150587	Catch Link (red)
9.	U8775276	Buckle
10.	U8750042	Long Link
11.	U8150457	Short Link with Dovetail
12.	Q8300611	Zipper Tube Mount
13.	Q8300554	Zipper Tube Clamp
14.	Q7750093	Zipper Tube

Appendix B: 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.

B.1 Magnetic Model Parts

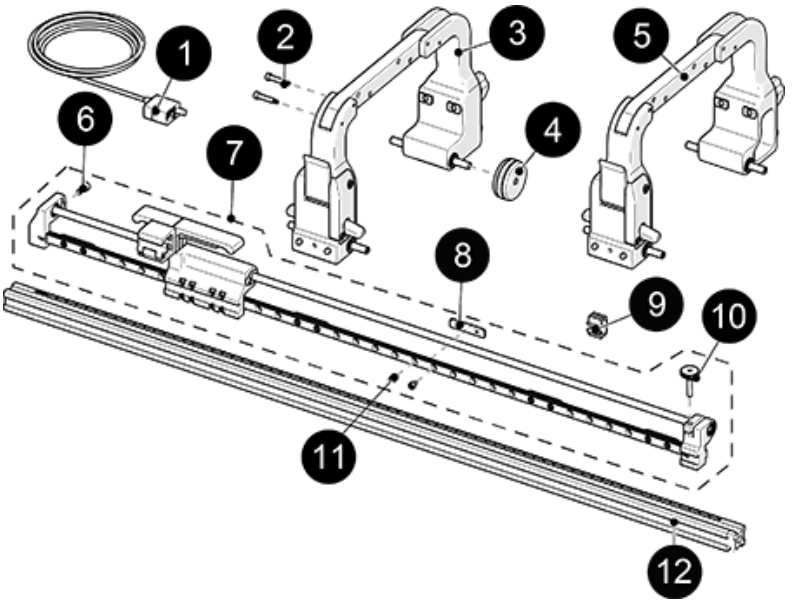


Figure B-1 Magnetic model parts

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.	Q8300601	Cable Clip
10.	Q8300619	Leadscrew Clamp Knob
11.	Q8300621	Screw, M3 × 4.5 SHCS, 3 mm
12.	Q8300624	Frame Bar with Ruler, 75 cm

B.2 Magnetic Model Kit Components

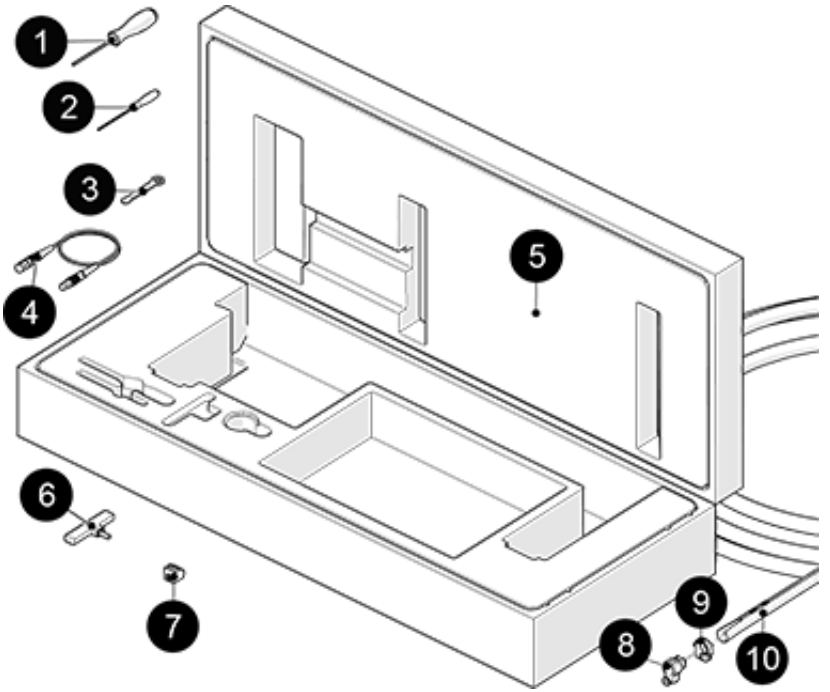


Figure B-2 Magnetic model kit components

Table 11 Magnetic model kit components

ID	Part number	Description
1.	Q8300559	3 mm Hex Driver
2.	Q8300606	2 mm Hex Driver
3.	Q8300607	3/8 in. Wrench
4.	Q8300608	Encoder Cable
5.	Q8300626	Magnetic MapSCANNER Case
6.	Q8300596	Large Yoke
7.	Q8300610	Dovetail Mount
8.	Q8300611	Zipper Tube Mount
9.	Q8300554	Zipper Tube Clamp
10.	Q7750093	Zipper Tube (various sizes available)

Appendix C: Accessories

C.1 Heavy Duty Probe Holder

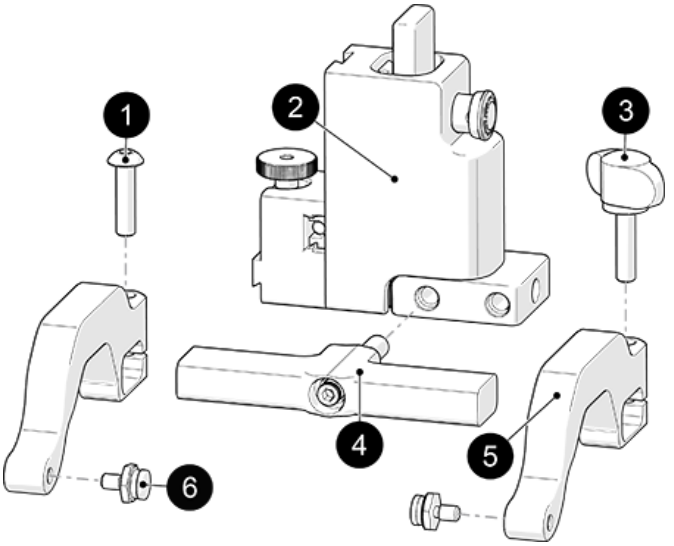


Figure C-1 Heavy duty probe holder

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 Q8300953	Standard Yoke Style Wide Yoke Style
5	Q8300595	Probe Holder Arm
6	U8775198 U8775199	Pivot Button Style for Evident PA Wedge Pivot Button Style for Evident TOFD Wedge

C.2 Pre-Amp Bracket (Optional)

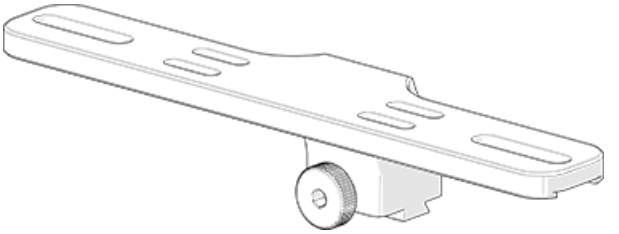


Figure C-2 Pre-amp bracket

Table 13 Pre-amp bracket

Part number	Description
Q8300570	Pre-Amp Bracket with Velcro

C.3 HydroFORM Cart

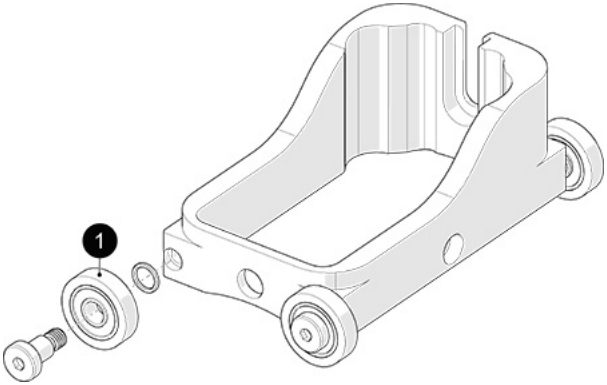


Figure C-3 HydroFORM cart wheel replacement

Table 14 HydroFORM cart (P/N: Q7750091)

Part number	Description
Q8300612	Urethane Molded Wheel Bearing

List of Figures

List of Tables