GLIDER
Two-Axis Flat Panel Scanner
User's Manual

DMTA029-01EN — Rev. G
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: DMTA029-01EN
Rev. G
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List of Abbreviations

A.M.	according to model
EC	eddy current
ECA	eddy current array
EFUP	environment-friendly use period
FSW	friction stir weld
ID	internal diameter
N/A	not applicable
NL	normal liters
OD	outside diameter
OEM	original equipment manufacturer
PA	phased array
SCFM	standard cubic feet per minute
UT	ultrasonic testing

Important Information — Please Read Before Use

Intended Use

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

WARNING

Do not use the GLIDER scanner 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 GLIDER scanner 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 GLIDER scanner, 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 GLIDER scanner 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.

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 GLIDER scanner 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: GLIDER scanner
Model: GLIDER scanner-MR/GLIDER scanner-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

This manual contains instructions on assembling, installing, and operating the GLIDER scanner.

The GLIDER scanner has two axes of motion: the X-axis and the Y-axis. Encoders, one on each axis, provide precise position information. The scanner is used for inspecting slightly curved and flat surfaces. It uses a single probe or transducer, which can vary in type:

- A conventional ultrasonic (UT) transducer or phased array ultrasonic (PA) probe.
- An eddy current (EC) probe or eddy current array (ECA) probe. The probe holder for the eddy current type of probe is not included with the scanner, however.

Typical applications include the inspection of plates and airplane fuselages for delamination, cracks, and corrosion, as well as the inspection of friction stir welds (FSW) on aluminum. The scanner is well suited for raster scanning with a single probe or transducer.

Commonly inspected materials include composites, aluminum, and carbon steel. Suction-cup mounting pods are used to hold the scanner against the inspection surface. On ferromagnetic materials such as steel, however, optional magnetic mounting pods are used to hold the scanner.

To help users understand and safely use the scanner, this manual provides the following subject matter:

- An overview of main components
- Setup and operation
- Maintenance
- Specifications

1. Overview

This chapter provides an overview of the components on the GLIDER scanner.

The scanner's X-axis is secured to the inspection surface by either suction cups or magnetic pods (sold separately). The probe (or transducer) holder moves along the Y-axis. Between inspection passes along one of the axes, the probe or transducer can be either incremented in fixed steps or moved freely along the other axis to perform a raster scan.

The GLIDER scanner is made up of three main component groups:

- Mounting pods (either suction-cup pods or magnetic pods)
- X-axis encoder module
- Y-axis encoder module

The elements of these main groups are illustrated in Figure 1-1 on page 24; a detailed description follows.

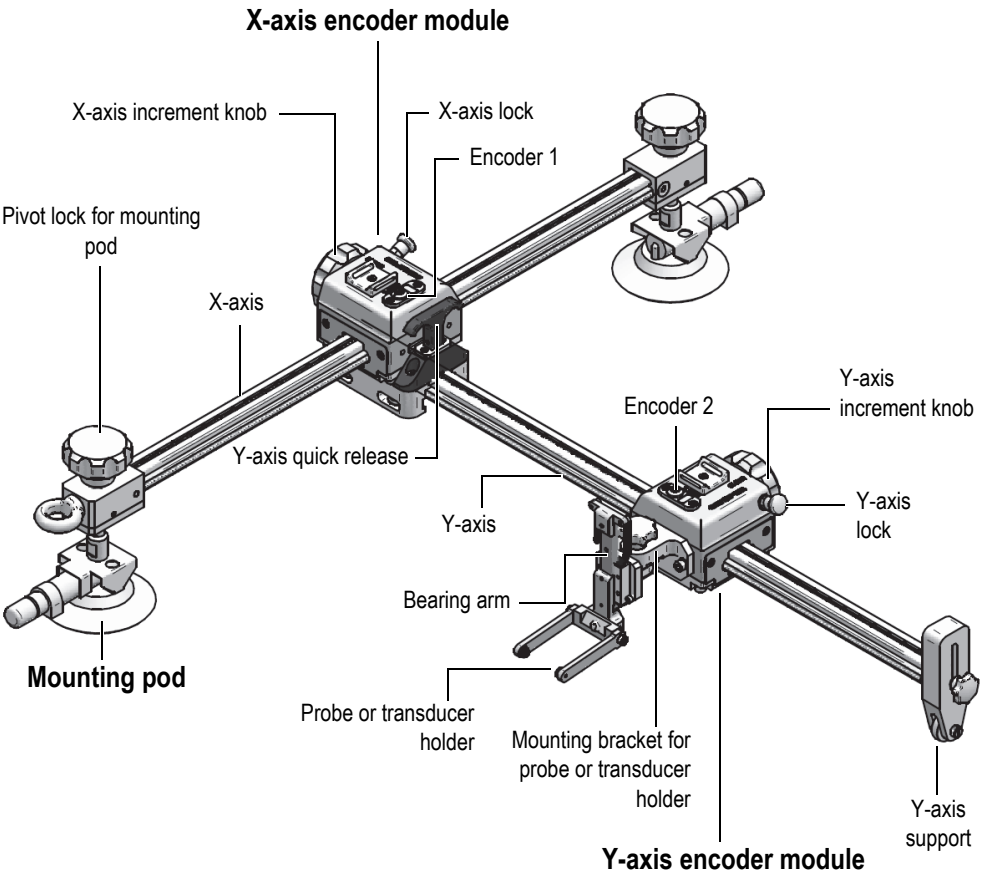

Figure 1-1 Scanner components

Mounting pods

The X-axis is attached to two mounting pods that hold the scanner against the inspection surface. Depending on the material to inspect, one of the following pod types can be used (see Figure 1-2 on page 25): suction-cup pods (manual type included) or magnetic pods (optional).

An optional vacuum generator with special suction cups is also available (for more details, see "Installing a Vacuum Generator with Pods" on page 29).

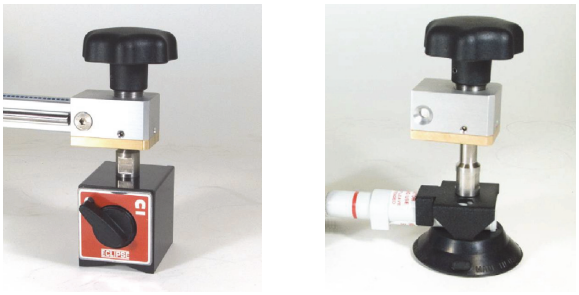

Figure 1-2 Mounting pod models: optional magnetic (*left*) and manual suction cup (*right*)

The following features are common to both the X-axis and the Y-axis encoder modules:

- Wheels, which are mounted on bearings that provide a smooth movement during the entire axis stroke.
- Encoders, which measure the probe position along the axes (encoder resolution is marked on the module).
- Locking devices, which allow each axis to be locked.
- Increment knobs, which can be set to either increment the axes in 4 mm steps, or to provide a free-running motion (see Figure 1-3 on page 25).

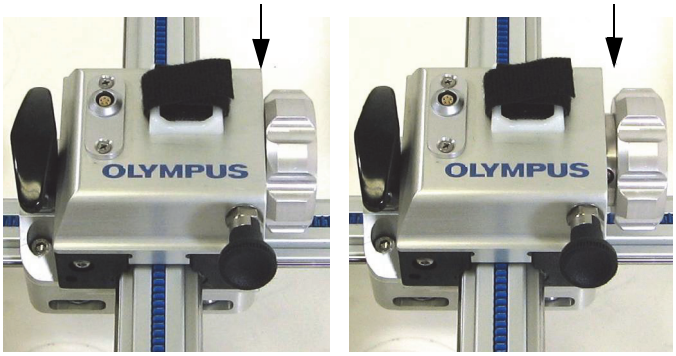

Figure 1-3 Increment-knob positions: incrementing (*left*) and free-running (*right*)

X-axis encoder module

In addition to the common features listed above, the X-axis encoder module is equipped with a quick-release device for the Y-axis, which allows you to position the Y-axis with respect to the X-axis.

Y-axis encoder module

In addition to the common features listed above, the Y-axis encoder module includes a mounting surface for the probe (or transducer) holder.

To help stabilize the Y-axis, one end rests on a height-adjustable support that is equipped with a wheel.

The scanner components are stored in a custom case (see Figure 1-4 on page 26).

Figure 1-4 Scanner components stored in the case

2. Scanner Assembly and Setup

The GLIDER scanner is designed for ease of assembly, servicing, installation, and setup.

2.1 Assembling the Scanner

To assemble the scanner, simply insert the Y-axis into the X-axis module.

To insert the Y-axis into the X-axis module

1. Pull up on the Y-axis quick release device (see Figure 2-1 on page 27).
2. Slide the Y-axis into the X-axis module.

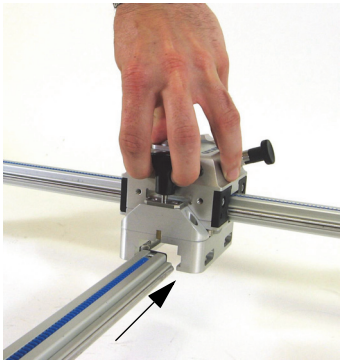

Figure 2-1 Inserting the Y-axis into the X-axis module

3. Release the quick-release device.

2.2 Part Replacement and Adjustment

This section contains procedures for replacing or adjusting the bearing arm springs, the mounting pods, the probe or transducer holders, and the encoders.

2.2.1 Replacing a Mounting Pod

The following procedure is valid for both the manual suction-cup model and the magnetic-pod model (see Figure 2-2 on page 28). For details on mounting pods used with an optional vacuum generator, see "Installing a Vacuum Generator with Pods" on page 29.

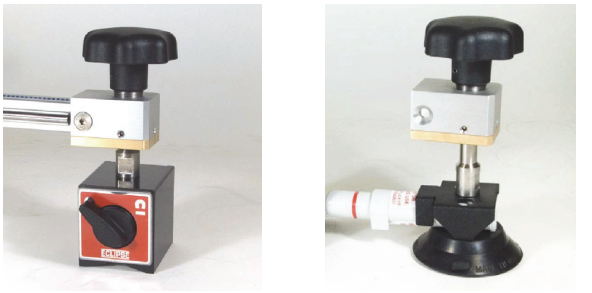

Figure 2-2 Mounting pod models: optional magnetic (*left*) and manual suction cup (*right*)

To replace a mounting pod

1. Remove the screws at the locations shown in Figure 2-3 on page 29.

Figure 2-3 Removing the screws on the mounting pod

2. Remove the mounting pod (see Figure 2-4 on page 29).

Figure 2-4 Removing the mounting pod

3. Install the new mounting pod in the reverse order of removal.

2.2.2 Installing a Vacuum Generator with Pods

An optional venturi vacuum generator that operates on compressed air can be installed on the GLIDER scanner. The vacuum generator requires two special mounting pods and air tubes (see Figure 2-5 on page 30).

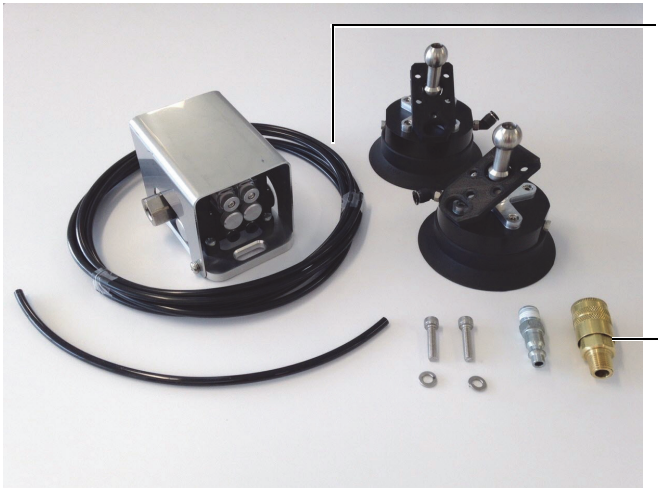

Figure 2-5 The vacuum generator kit (P/N: Q7500041) with mounting pods

To install a vacuum generator with pods

1. Remove both mounting pods from the pod brackets, and remove one of the pod brackets from the frame (see Figure 2-6 on page 31).

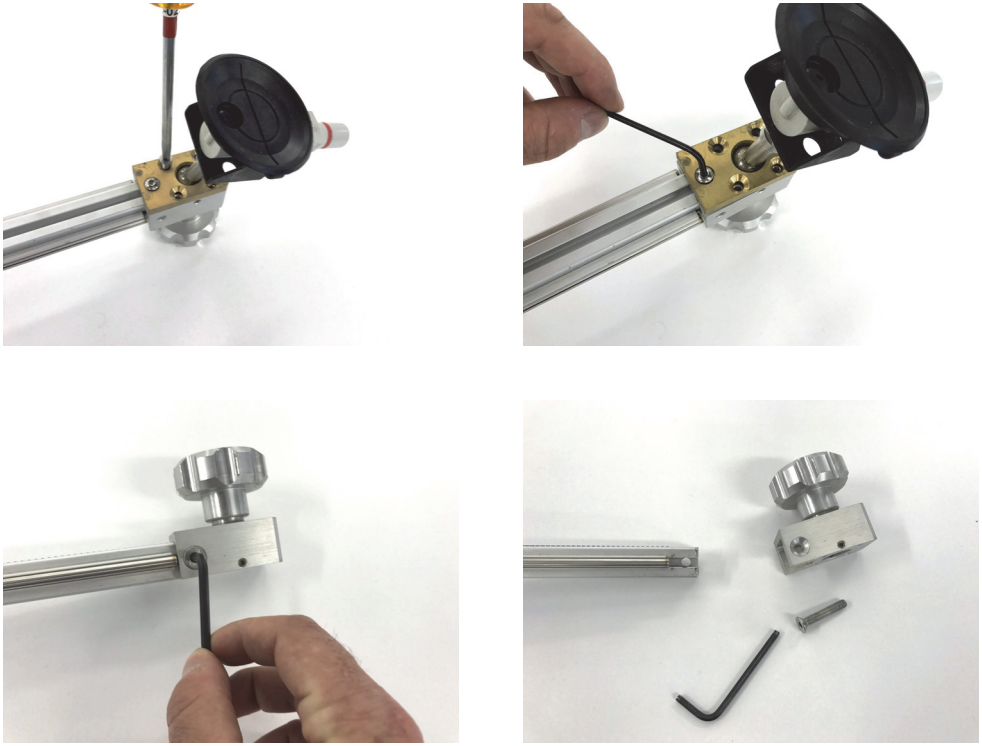

Figure 2-6 Removing a mounting pod (*top*) and pod bracket (*bottom*)

2. Slide the module off the frame (see Figure 2-7 on page 32).

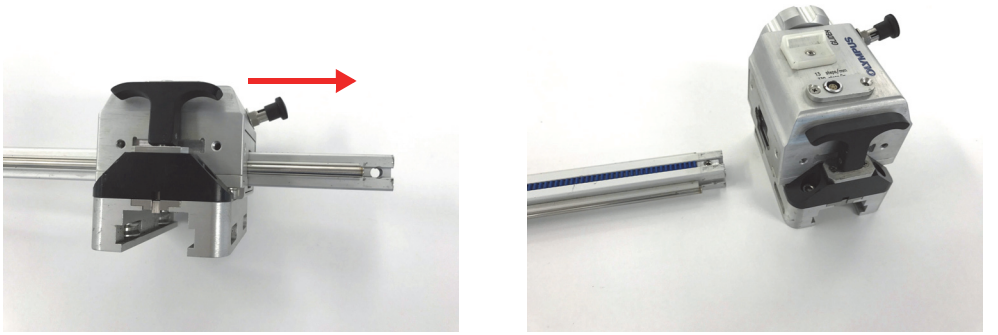

Figure 2-7 Sliding the module off the frame

3. Feed the longest air tube through the opening on the new mounting pod, and then connect it to the fitting (see Figure 2-8 on page 32).

Figure 2-8 Feeding the tube through the opening (*left*) to the fitting (*right*)

4. Push the tube into the slot near the frame end, and install the new mounting pod on the bracket on the frame (see Figure 2-9 on page 33).

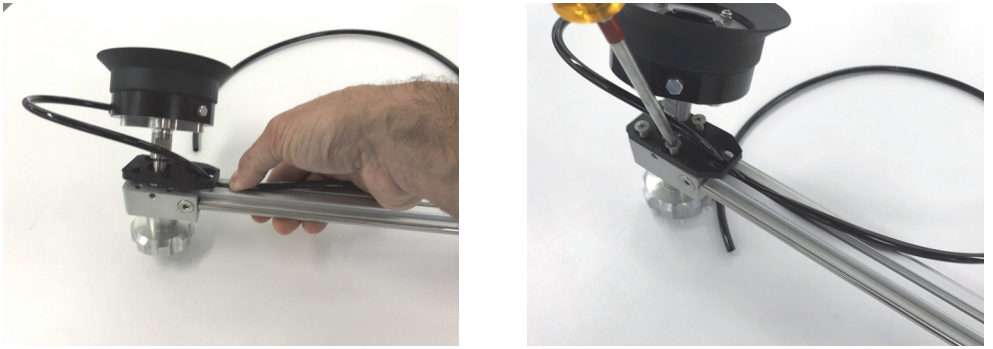

Figure 2-9 Pushing the tube into the frame (*left*) and tightening the screws (*right*)

5. Remove the frame nut on the open end of the frame, and push the tube into the frame slot past the frame end (see Figure 2-10 on page 33).

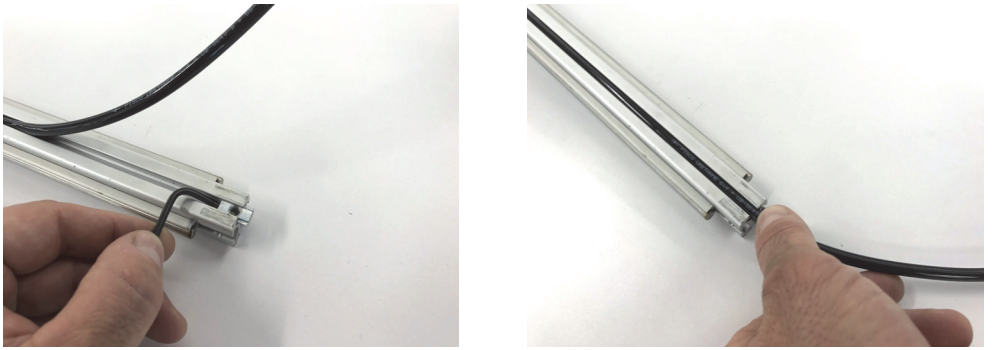

Figure 2-10 Removing the nut (*left*) and feeding the tube to the frame end (*right*)

6. Slide the module back onto the frame, and then pull back the tube just enough to slide the frame nut back into the end of the frame (see Figure 2-11 on page 34).

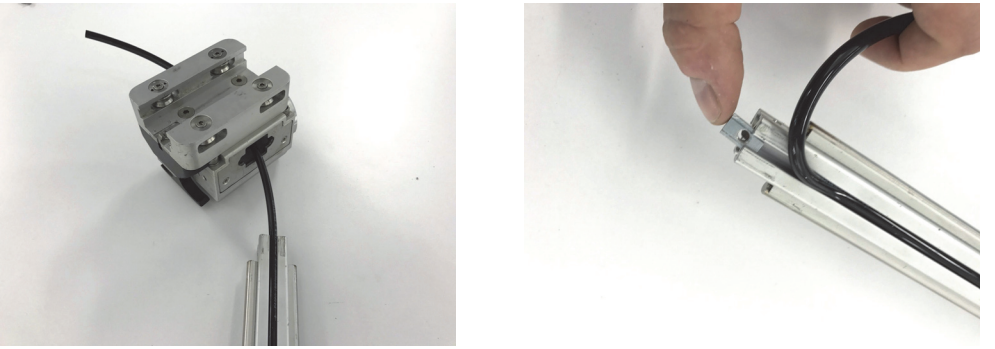

Figure 2-11 Reinstalling the module (*left*) and frame nut (*right*)

7. Align the frame nut with the end of the frame, and then slide the pod bracket back onto the frame (see Figure 2-12 on page 34).

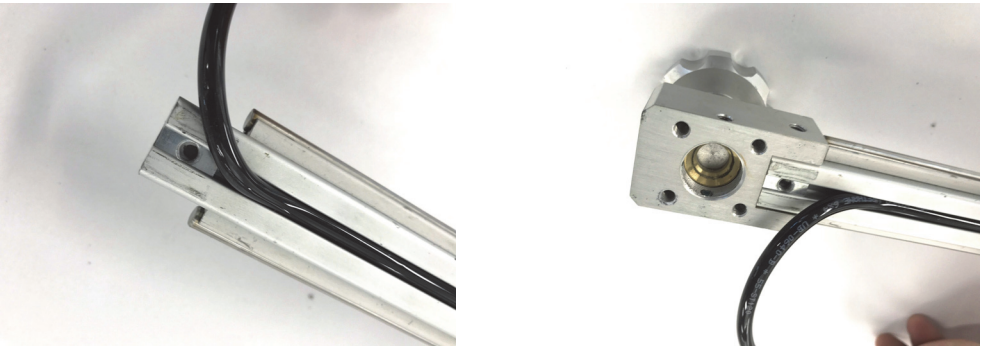

Figure 2-12 Positioning the frame nut (*left*) and pod bracket (*right*)

8. Fasten the pod bracket, and then install the mounting pod so that the tube passes through the opening on the pod (see Figure 2-13 on page 35).

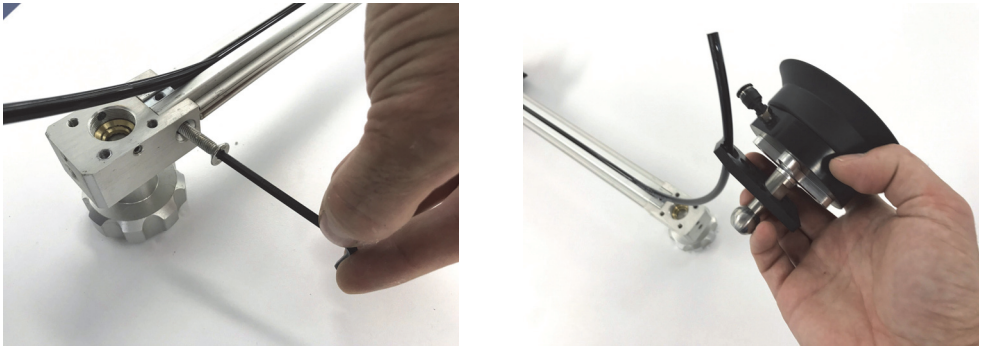

Figure 2-13 Fastening the bracket (*left*) and installing the mounting pod (*right*)

9. Tighten the screws on the mounting pod (see Figure 2-14 on page 35).

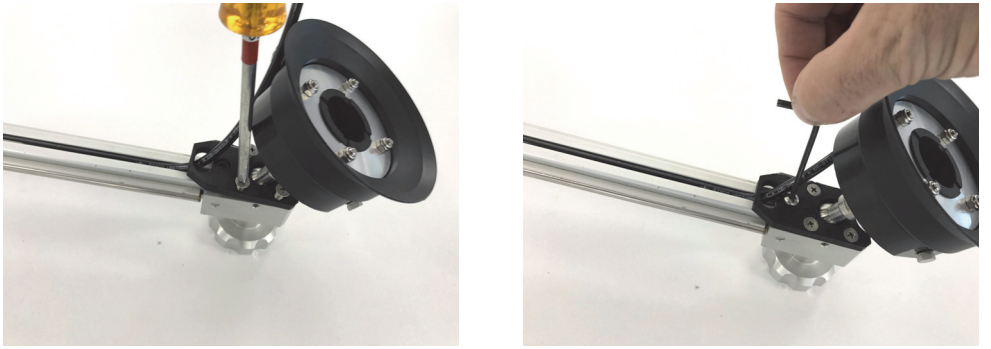

Figure 2-14 Tightening the screws on the mounting pod

10. Install the vacuum generator onto the pod bracket by screwing the bolt into the threaded hole on the end (see Figure 2-15 on page 36). Tighten the bolt.

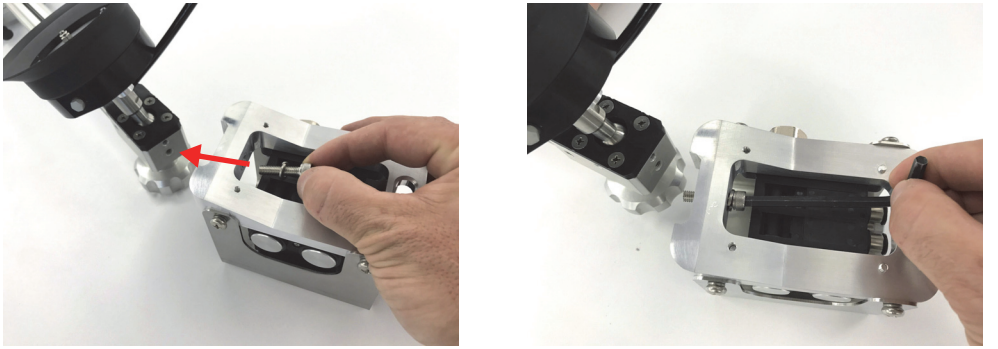

Figure 2-15 Installing the vacuum generator

11. Cut the excess length from the long tube, then connect the tube to the vacuum generator and install the air supply connector [with a suitable sealant on its threads] (see Figure 2-16 on page 37).

    Be sure to push the tube ends until they touch the bottom of the quick-connector openings, and sufficiently tighten (but do not over-tighten) the air supply connector in the fitting on the vacuum generator.

    An example scanner with vacuum generator is shown in Figure 2-17 on page 37.

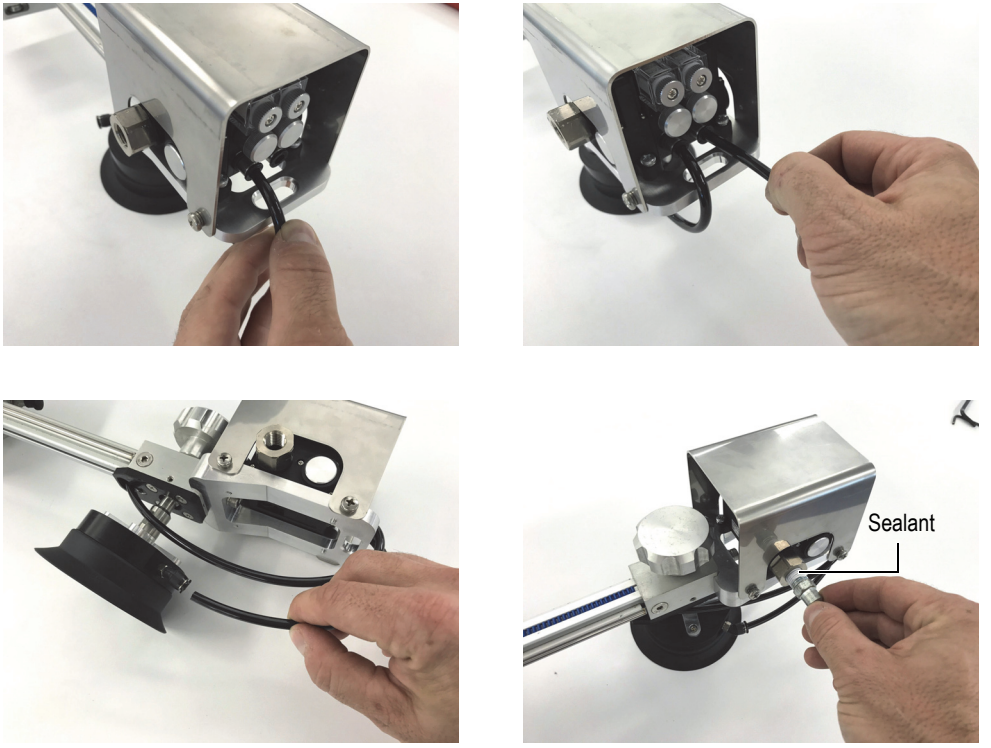

Figure 2-16 Connecting the tubes to the vacuum generator

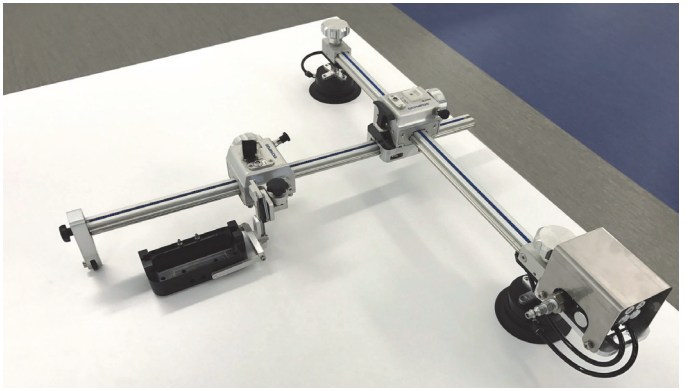

Figure 2-17 An example scanner with vacuum generator installed

2.2.3 Adjusting the Orientation of the Probe Holder

The probe orientation can be easily adjusted by unlocking and turning the probe holder in set increments.

To adjust the orientation of the probe holder

1. Loosen the locking knob (see Figure 2-18 on page 38.)

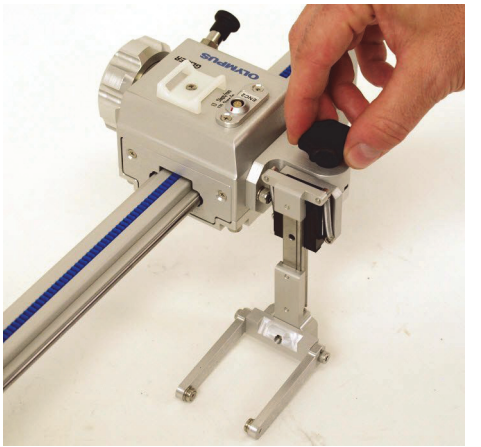

Figure 2-18 Loosening the knob

2. Free the position-locking notch under the knob and turn the probe holder to the desired position (see Figure 2-19 on page 39).

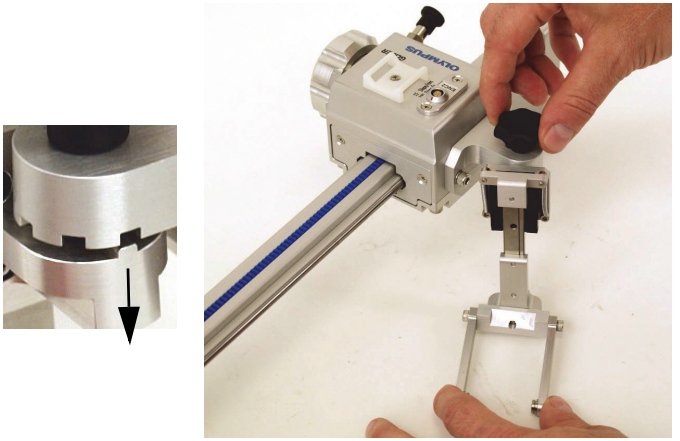

Figure 2-19 Freeing the notch (*left*) and turning the probe holder

3. Align the notch in the new position (see Figure 2-20 on page 39).

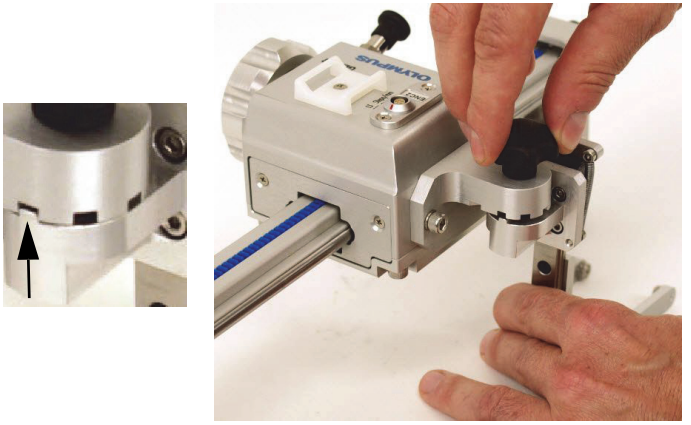

Figure 2-20 Aligning the notch in the new position

4. Tighten the knob to lock the probe holder (see Figure 2-21 on page 40).

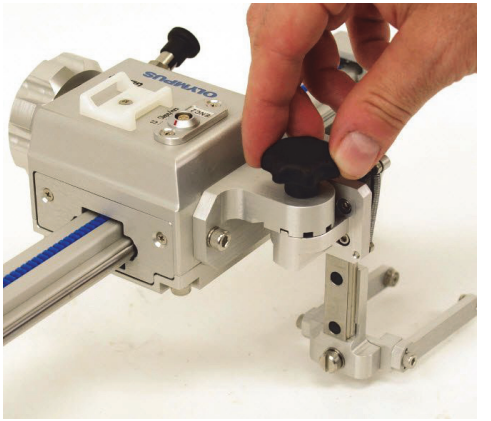

Figure 2-21 Tightening the knob in the new position

2.2.4 Installing Springs on the Bearing Arm

Depending on how you choose to operate the scanner, it might be necessary to install springs on the bearing arm:

- If you prefer moving the Y-axis encoder module with your hand resting on the probe (or transducer), you do not require springs, because your hand will provide the required downward pressure on the probe (or transducer).
- If you prefer to move the Y-axis encoder module with your hand resting on the module, you need to install springs on the arm.

The spring hardware is shown in Figure 2-22 on page 40.

Figure 2-22 Bearing-arm springs and screws

To install springs on the bearing arm

1. Insert a mounting screw through the end loop of one of the springs, and then screw the screw into one of the threaded holes at the top of the bearing arm, as shown in Figure 2-23 on page 41.

   Lift up the bearing arm for ease of access.

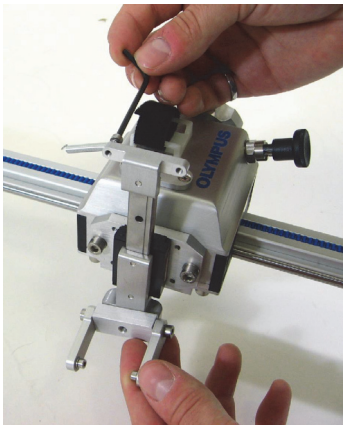

Figure 2-23 Connecting the spring to the top of the bearing arm

2. Connect the other end of the spring to the mounting bracket, as shown in Figure 2-24 on page 42.

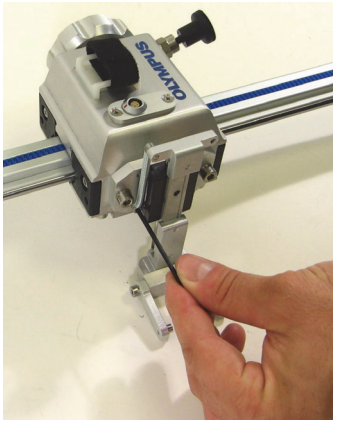

Figure 2-24 Connecting the spring to the mounting bracket

3. Repeat the above steps for the second spring.

The probe or transducer holder is now held against the inspection surface with a constant pressure (see Figure 2-25 on page 42).

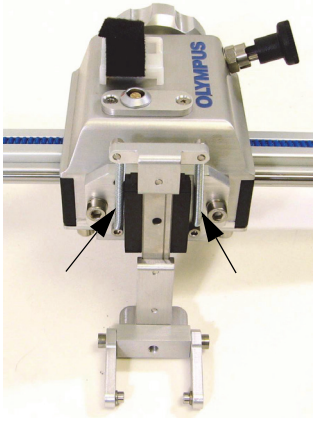

Figure 2-25 Probe or transducer holder held down by springs on bearing arm

2.2.5 Replacing a Conventional Ultrasonic Transducer

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

To replace a conventional ultrasonic transducer

1. Turn off the couplant flow.
2. Disconnect the couplant tubes from the couplant source, and from the wedge, if necessary.
3. Disconnect the transducer cable.
4. Remove the scanner from the inspection surface.
5. Using a flat screwdriver, at the back of the bearing arm, unscrew the screw to free the yoke from the bearing arm (see Figure 2-26 on page 43).

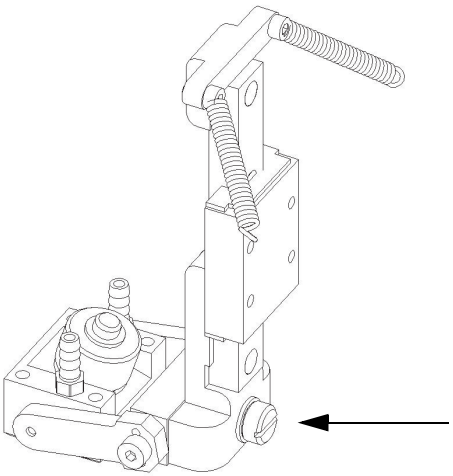

Figure 2-26 The screw that holds the yoke on the bearing arm

6. Remove the yoke.
7. Using a hexagonal key, remove the screw that holds the yoke parts together (see Figure 2-27 on page 44).

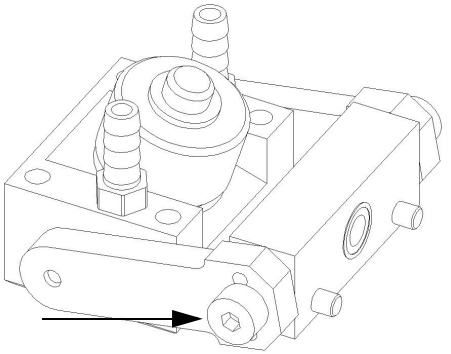

Figure 2-27 The screw that holds the yoke parts together

8. Ensure that the transducer cable is disconnected, and then unscrew the transducer from the wedge (see Figure 2-28 on page 44).

   It is possible to unscrew the transducer without removing the wedge.

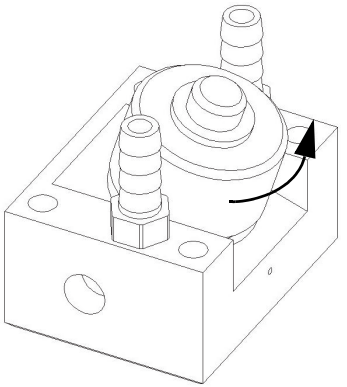

Figure 2-28 Unscrewing the transducer

9. Screw the new transducer onto the wedge.

NOTE

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

10. Tighten the transducer on the wedge.

CAUTION

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

11. Reinstall the transducer assembly on the bearing arm.

2.2.6 Replacing a Phased Array Probe

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

To replace a phased array probe

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

CAUTION

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

4. Remove the scanner from the inspection surface.
5. Using a flat screwdriver, at the back of the bearing arm, unscrew the screw to free the yoke from the bearing arm (see Figure 2-26 on page 43).
6. If it is necessary to remove the yoke from the wedge, use a hexagonal key to remove the screw (on the side of the yoke) that holds the yoke parts together (see Figure 2-29 on page 46).

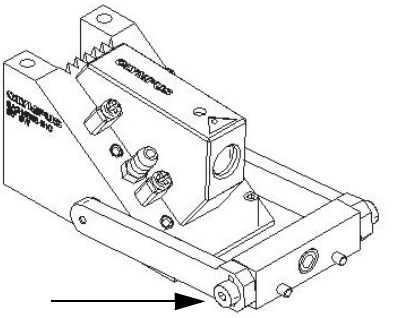

Figure 2-29 The screw that holds the yoke parts together

7. Using a cross-head screwdriver, unscrew the four screws that hold the probe on the wedge, and then remove the probe from the wedge (see Figure 2-30 on page 46).

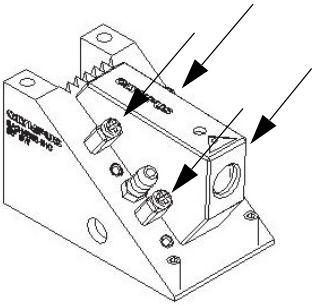

Figure 2-30 Removing the probe from the wedge

8. Install the new probe on the wedge.

NOTE

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

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

CAUTION

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

10. Reinstall the yoke on the wedge.
11. Reinstall the probe assembly on the bearing arm.

2.2.7 Changing an Encoder

An encoder only needs to be changed if it malfunctions.

To change an encoder

1. Remove the two screws (see Figure 2-31 on page 47).

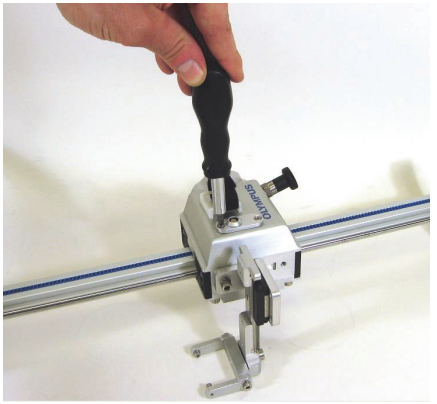

Figure 2-31 Removing the encoder screws

2. Remove the encoder (see Figure 2-32 on page 48), and then replace it with the new encoder, repeating the steps in reverse order.

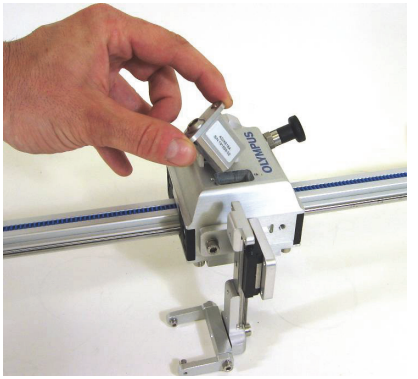

Figure 2-32 Removing the encoder

2.2.8 Changing the Length of an Axis

The X-axis or Y-axis length on the GLIDER scanner can be increased or decreased by changing the appropriate frame section.

NOTE

To minimize wear of the axis-gear components, it is recommended to minimize the axis-changing frequency.

To change the length of an axis

1. Remove the axis by turning the increment knob with one hand while supporting the axis with the other hand (see Figure 2-33 on page 49).

   You will feel a light resistance as the axis is moving; however, continue to turn the knob until the axis completely exits the encoder module.

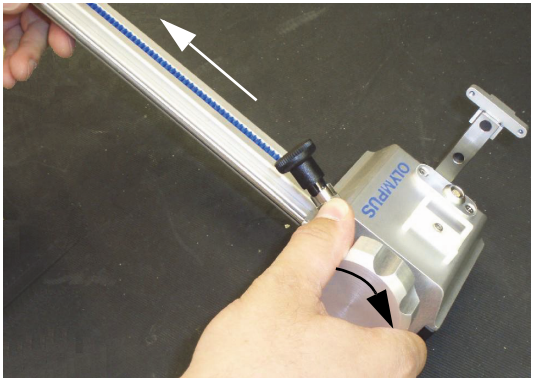

Figure 2-33 Removing the axis

2. Align the new axis with the opening in the encoder module (see Figure 2-34 on page 49).
   The rack gear must align with the pinion gear in the module.

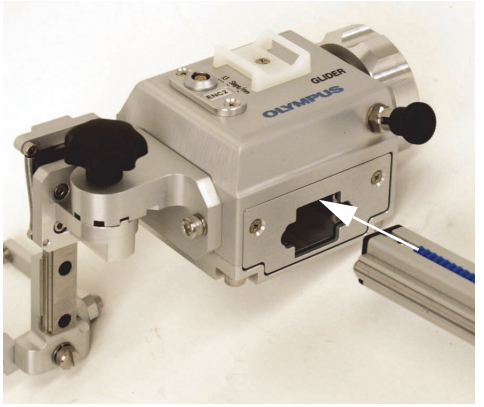

Figure 2-34 Aligning the new axis

3. Turn the increment knob to move the axis into the module (see Figure 2-35 on page 50).

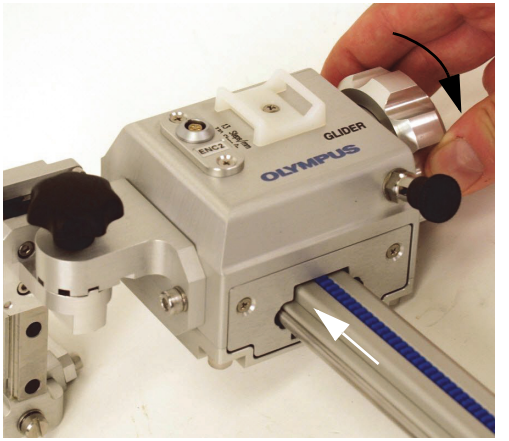

Figure 2-35 Turning the increment knob to move axis into the module

4. Turn the increment knob to completely pass the axis through the encoder module (see Figure 2-36 on page 50).

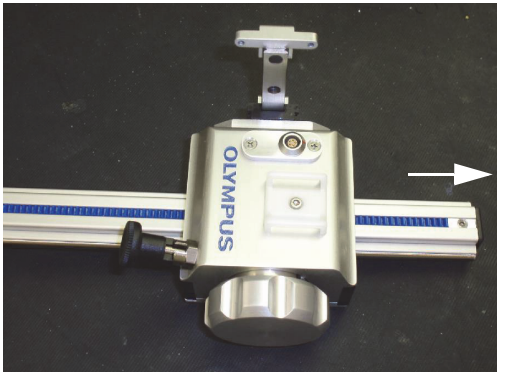

Figure 2-36 The axis passed completely through the encoder module

2.3 Scanner Installation on the Inspection Surface

To install the scanner on the inspection surface, the scanner needs to be positioned, and the mounting pods need to be attached to the surface. This section outlines the procedures for the two types of mounting pod: suction-cup and magnetic pods.

2.3.1 Installing a Scanner with Suction-Cup Pods

The suction cups are used to hold the scanner against a smooth, non-ferromagnetic surface.

To install a scanner with suction-cup pods

1. Loosen the pivot locks on the two mounting pods (see Figure 2-37 on page 51).

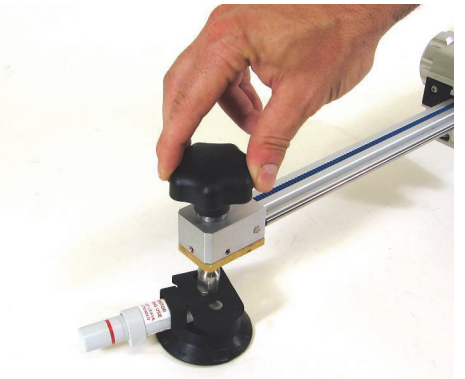

Figure 2-37 Loosening the pivot lock on a pod (manual type shown)

2. Place the scanner at the desired position on the inspection surface.

   Ensure that good contact is made between the suction cup and the inspection surface.
3. Apply vacuum to the suction cups:
   - For manual-type cups, while applying a downward pressure on the scanner with one hand, repeatedly squeeze the pump button with the other hand until the suction cup is engaged and well-seated on the inspection surface (see Figure 2-38 on page 52). Repeat this for the second pod.

OR

For vacuum generator suction cups (optional), connect and turn on the air supply to the vacuum generator, and check that there is sufficient vacuum to hold both cups securely on the inspection surface. Be sure to use a reliable, uninterrupted supply of air with sufficient flow and pressure to continuously secure the cups on the surface during inspection (see Table 2 on page 64 for specifications).

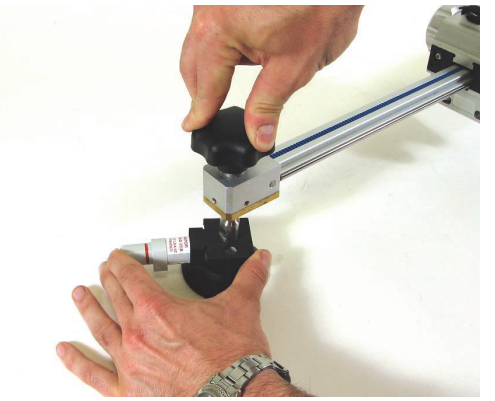

Figure 2-38 Attaching manual suction cups to the inspection surface

4. Set the Y-axis level:
   a) Loosen the thumbscrew used to lock the Y-axis support.
   b) Adjust the level of the Y-axis.
   c) When the Y-axis is level, tighten the thumbscrew (see Figure 2-39 on page 53).

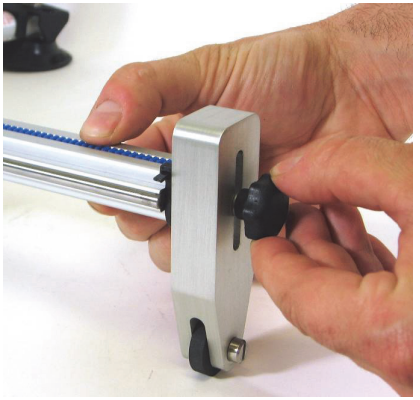

Figure 2-39 Tightening the thumbscrew on the Y-axis support

5. Tighten the pivot locks on the two mounting pods.

NOTE

To remove a scanner with manual cups from the inspection surface, push up against the tab on the suction cups, as shown in Figure 2-40 on page 53. To remove a scanner using a vacuum generator, turn off the air supply to the generator.

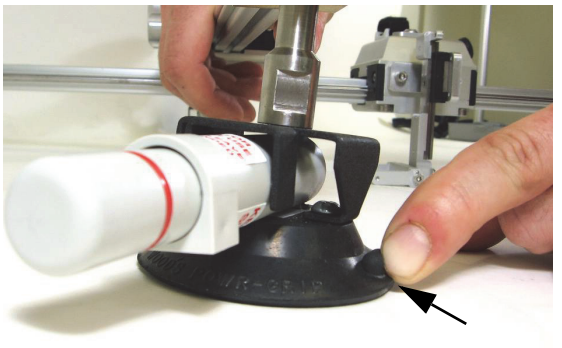

Figure 2-40 Disengaging a manual-type suction cup from the surface

2.3.2 Installing a Scanner with Magnetic Pods

The magnetic pods are used to hold the scanner against a ferromagnetic surface.

WARNING

When the magnetic pods are switched on, they may exert forces that exceed regulatory limits. These forces are not exerted in the switched-off position. When using the magnetic pods, position the pod on the surface before switching on the magnet. Failure to do so may result in serious injuries.

To install a scanner with magnetic pods

1. Loosen the pivot locks on the two mounting pods.
2. Before placing the scanner on the inspection surface, ensure that the magnetic-activation lever is in the "off" position (see Figure 2-41 on page 54).

Figure 2-41 Magnetic-activation lever in the "off" position

3. Place the scanner at the desired position on the inspection surface.

IMPORTANT

To ensure good adhesion to the inspection surface, be sure to optimize the contact between the magnetic pod and the surface.

4. When you are satisfied with the scanner position, turn the magnetic-activation lever to the “on” position (see Figure 2-42 on page 55).

Figure 2-42 Magnetic-activation lever in the “on” position

5. Check the holding force of each magnetic pod.

   If a pod is not holding strongly enough, release it, and then repeat the optimization of the contact area between the pod and the surface to firmly attach the pod to the surface.

WARNING

If you aren’t able to achieve a good holding force with the pod, do not use the scanner on a surface that has a steep slope. Otherwise, equipment damage or personal injuries may result.

---

6. Set the Y-axis level:
   a) Loosen the thumbscrew used to lock the Y-axis support.
   b) Adjust the level of the Y-axis.
   c) When the Y-axis is level, tighten the thumbscrew (see Figure 2-39 on page 53).
7. Tighten the pivot locks on the two mounting pods.

NOTE

To remove a magnetic pod from the inspection surface, simply turn the magnetic-activation lever to the "off" position.

2.4 Setting Up the Scanner for Inspection

Before starting the inspection, it is necessary to ensure that the scanner's connections (such as the probe or transducer cable, encoder cable, and water tube) are correctly made on the main equipment components.

To set up the scanner for inspection

1. Use the dedicated cable to connect the probe or transducer to the acquisition unit.
2. Connect the water tube between the wedge and the water-supply unit (see Figure 2-43 on page 56).
3. Connect the encoders to the acquisition unit.

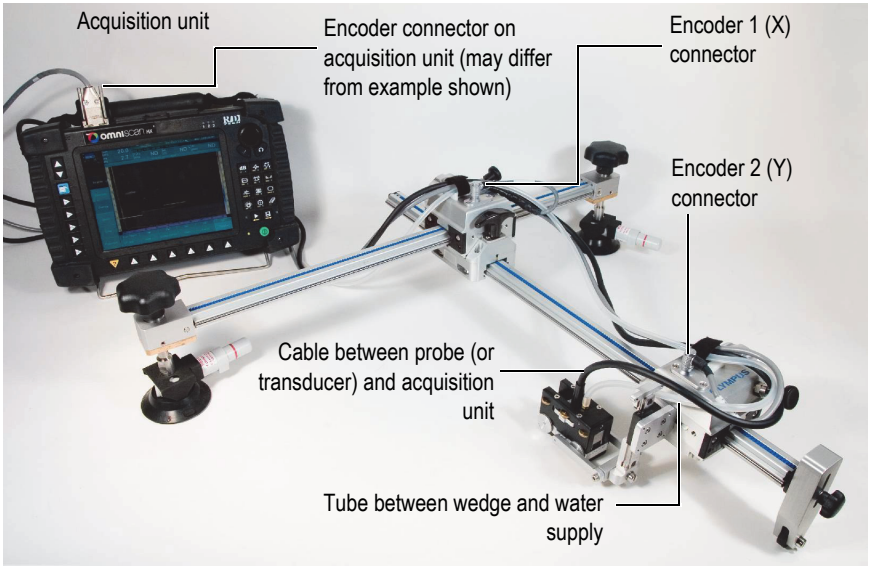

Figure 2-43 Scanner setup

4. Verify that the encoders have the desired allocation in the acquisition unit.
5. Enter the encoder resolution on the acquisition unit. It is recommended to perform an encoder calibration on both axes to improve the precision.
6. Conveniently arrange your connections: a suggested arrangement—using Velcro and cable ties—is shown in Figure 2-43 on page 56.

3. Operating the Scanner

The GLIDER scanner is designed to be used manually, and is well suited for raster scanning. In the example raster-scanning procedure outlined below, the Y-axis is used for the scanning motion, while the X-axis is used for incrementing between scanning passes.

WARNING

If you are operating the GLIDER scanner in an upside down position, or if you are operating it on a high structure, secure the GLIDER scanner with a safety line (lanyard) to prevent it from falling. Failure to secure the scanner can lead to serious personal injuries or death.

WARNING

When you are moving the GLIDER scanner and changing pod locations, make sure that the magnetic lock is switched on in the new location. Failure to correctly switch on the magnetic lock may result in serious personal injuries or death.

To operate the scanner

1. Position and attach the scanner so that you will be able to cover the entire inspection surface with your scanning pattern (see “Scanner Installation on the Inspection Surface” on page 51).
2. Place the Y-axis encoder module so that the probe or transducer is located at the starting position of the scanning pattern.

3. Lock the X-axis by using the locking device (see Figure 3-1 on page 60).

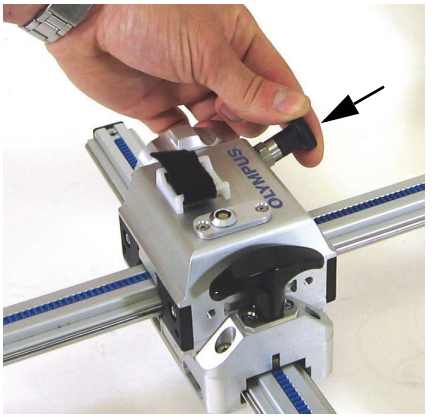

Figure 3-1 Knob engages inwards to lock the X-axis

4. Pull the increment knob for the Y-axis into the free-running position (see Figure 3-2 on page 60).

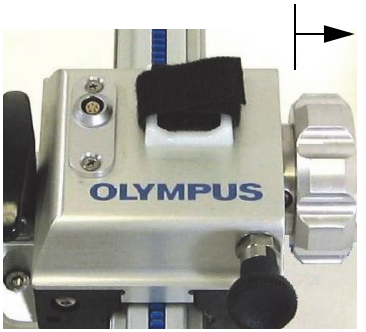

Figure 3-2 The increment knob in the free-running position

5. Unlock the Y-axis.
6. Move the Y-axis encoder module across the inspection surface (see Figure 3-3 on page 61).

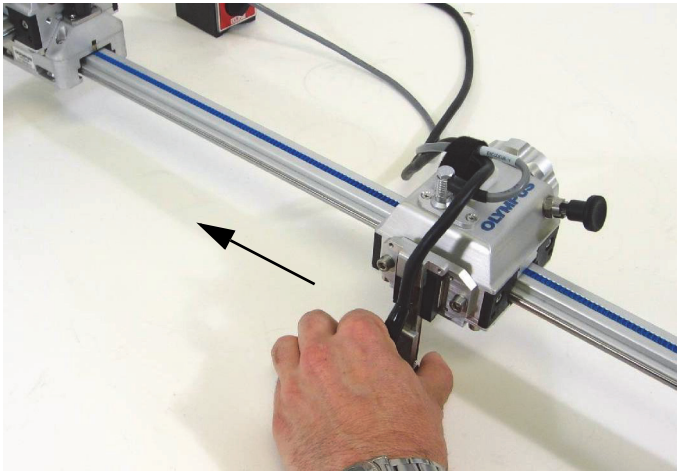

Figure 3-3 Making the inspection pass with the Y-axis module

7. When you have completed your inspection pass, lock the Y-axis.
8. Unlock the X-axis (see Figure 3-4 on page 61).

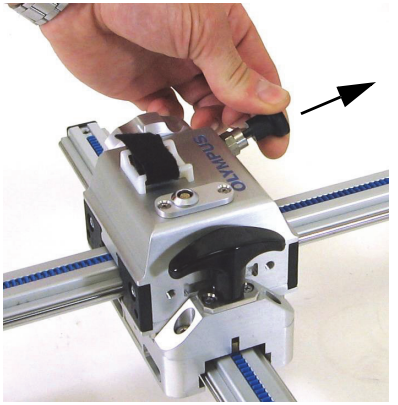

Figure 3-4 Pull out the knob to unlock the X-axis

9. With the increment knob in the 4 mm increment position, turn the knob the desired number of increments (see Figure 3-5 on page 62).

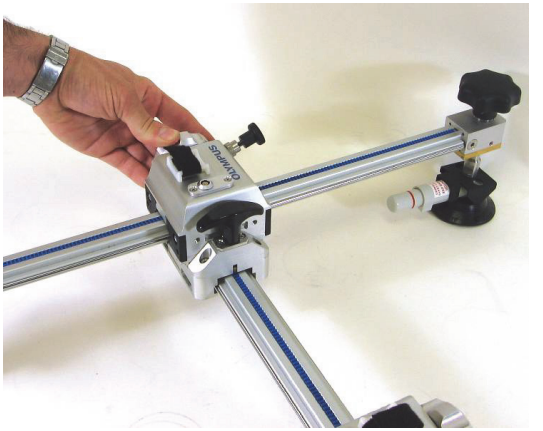

Figure 3-5 Turning the increment knob

10. Lock the X-axis.
11. Unlock the Y-axis.
12. Move the Y-axis encoder module in the reverse direction.
13. Repeat the above inspection-pass steps until the entire inspection surface has been covered.

4. Specifications

The general specifications for the GLIDER scanner are listed in Table 1 on page 63.

Table 1 General specifications

Parameter	Value
General	
Dimensions and weight	See Table 3 on page 65
Motion increment	4 mm
Mounting pod holding force — direction axial to mounting post (under ideal conditions)	Manual suction cups (76 mm [3 in.] OD): 7 kg (15 lb) per cup Manual suction cups (114 mm [4.5 in.] OD): 18 kg (40 lb) per cup Venturi suction cups (102 mm [4 in.] OD): see Table 2 on page 64 Magnetic pods: 81 kg (180 lb) per pod
Encoder	Type: Quadrature
	Resolution: 13 steps/mm ±0.15 steps/mm (330 steps/in. ±0.006 steps/in.)
	Waterproof
	Pinout: see Figure 4-1 on page 65
	Power rating: 5 VDC, 25 mA maximum
	Frequency: 0 kHz to 1.5 kHz (for a maximum displacement velocity of 10 cm/s [4 in./s])
Environment	
Outdoor use	Yes
Altitude	Up to 2000 m
Operating temperature	5 °C to 40 °C
Storage temperature	−20 °C to 60 °C
Relative humidity (RH)	Max. 80 %, non condensing

Table 1 General specifications *(continued)*

Parameter	Value
Wet locations	Yes
Pollution level	2
Waterproof	Yes
Venturi vacuum generator (optional)	
Venturi generator	Manufacturer: Pisco
	Manufacturer's part number: VKMH12B-S692NS2-B02
	Air pressure, flow, and holding force: see Table 2 on page 64
Air input connector	Quick-coupling male nipple, 1/4 NPT

Table 2 Venturi vacuum generator specifications (VKMH12B-S692NS2-B02)

Parameter	Minimum value	Maximum value
Input air supply pressure MPa (psi)	0.35 (50.8)	0.5 (72.5)
Final vacuum −kPa (−inHg)	73 (21.6)	93 (27.6)
Suction flow NL/min (SCFM)	36 (1.26)	38 (1.33)
Air consumption NL/min (SCFM)	47 (1.64)	70 (2.45)
Horizontal mounting holding force per 102 mm (4 in.) OD suction cup (safety factor = 4) kg (lb)	15.0 (33)	18.2 (40)
Vertical mounting holding force per 102 mm (4 in.) OD suction cup (safety factor = 8) kg (lb)	7.5 (16.5)	9.1 (20)

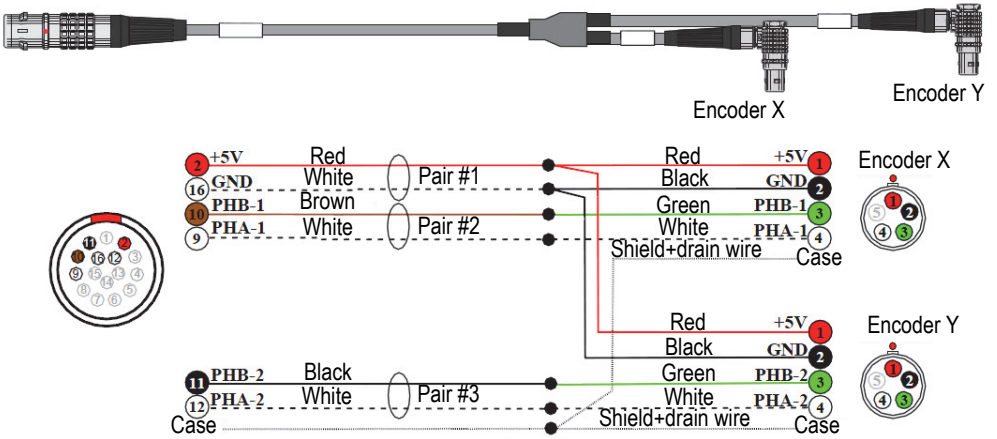

Figure 4-1 Pinout for EWIX1415 cable

Table 3 Dimensions (overall)

Model	X (length)	Y (width)	Z (height)
18×18	700 mm (27.56 in.)	690 mm (27.16 in.)	152 mm (5.98 in.)
24×24	900 mm (35.43 in.)	845 mm (33.26 in.)	152 mm (5.98 in.)
36×36	1200 mm (47.24 in.)	1150 mm (45.27 in.)	152 mm (5.98 in.)
72×24	2159 mm (85.00 in.)	845 mm (33.26 in.)	152 mm (5.98 in.)

5. Accessories and Spare Parts

This chapter contains lists of accessories (such as yokes and pumps) and spare parts for the GLIDER scanner.

5.1 Yokes

Figure 5-1 on page 67 and Table 4 on page 67 provide ordering information for yokes. Yoke dimensions depend on the wedge model used.

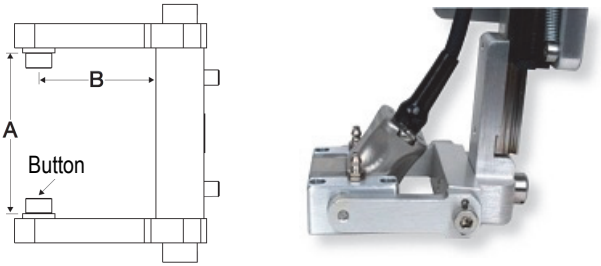

Figure 5-1 Yoke geometry

Table 4 Replacement yokes

Part number	Wedge compliance	Button OD (mm)	A (mm)	B (mm)
Standard yokes				
U8775048[a]	ST1, ST2, SPE1, SPE2, SPE3, SA0	5	31.75	23.5

Table 4 Replacement yokes *(continued)*

Part number	Wedge compliance	Button OD (mm)	A (mm)	B (mm)
U8775047[b]	SA1, SA2, SA10, SA11, SA12, SA31, SA32, SI1, SPWZ3, SNW1-AQ25 (WR), and SNW3-AQ25	8	40	55
U8775046	SA10, SA11, SA31, and SA32	8	40	38
Other yokes				
U8775187	SPWZ1 and SA14 (in reverse position)	8	40	46
U8780194	SPWZ1, SA14, RexoFORM, and SNW3-AQ25-WR	8	40	65
U8775055	SA1-L (lateral)	8	45	60
U8779096	SA3	8	50	55
U8775084	SA4, SA5, and HydroFORM-A-LiteHolder	8	55	55
U8779097	Water wedge	8	50	65
U8775132	SNW1	8	31.75	55
U8775165	SNW2	8	31.75	23.5
U8775164	SNW3	8	31.75	65
Q7750014	SA17-DN	5	50	38
Q7750015	SA17-N	5	31.75	38
U8775056	SA27-DN and Creeping wave probe holder (U8775080)	5	40	23

a. Standard yoke for TOFD-P/E probe mounting.
b. Standard yoke for phased array probe mounting.

5.2 Couplant-Feed Units

Couplant can be supplied to wedges by either an electric or a manual pump (see Table 5 on page 69).

Table 5 Couplant-feed units

Part number	Description
U8780008	Electric couplant-feed unit. 3.78 L/min at 414 kPa (1 GPM at 60 psi) 100 VAC/240 VAC
U8780009	Electric couplant-feed unit with suction capability Same operating specification as U8780008
U8775153	4 L manual water pump with irrigation tubes and fittings
U8775001	8 L manual water pump with irrigation tubes and fittings

5.3 Connector Reference

GLIDER scanner models sold after July 2013 come standard with the LEMO connector, which is compatible with the OmniScan MX2 and SX instruments. For use with a different instrument, an optional adaptor is required (see Table 6 on page 69).

Table 6 Required encoder cable adaptor

Scanner connector	Instrument		
	OmniScan MX	OmniScan MX2, SX, and FOCUS PX	TomoScan FOCUS LT
LEMO (from July 2013 onward)	U8780329	N/A	U8769010
DE15 (Prior to July 2013)	N/A	U8775201	U8767107

5.4 Spare Parts

An exploded view of the GLIDER scanner is shown in Figure 5-2 on page 70. A list of standard spare parts is provided in Table 7 on page 70.

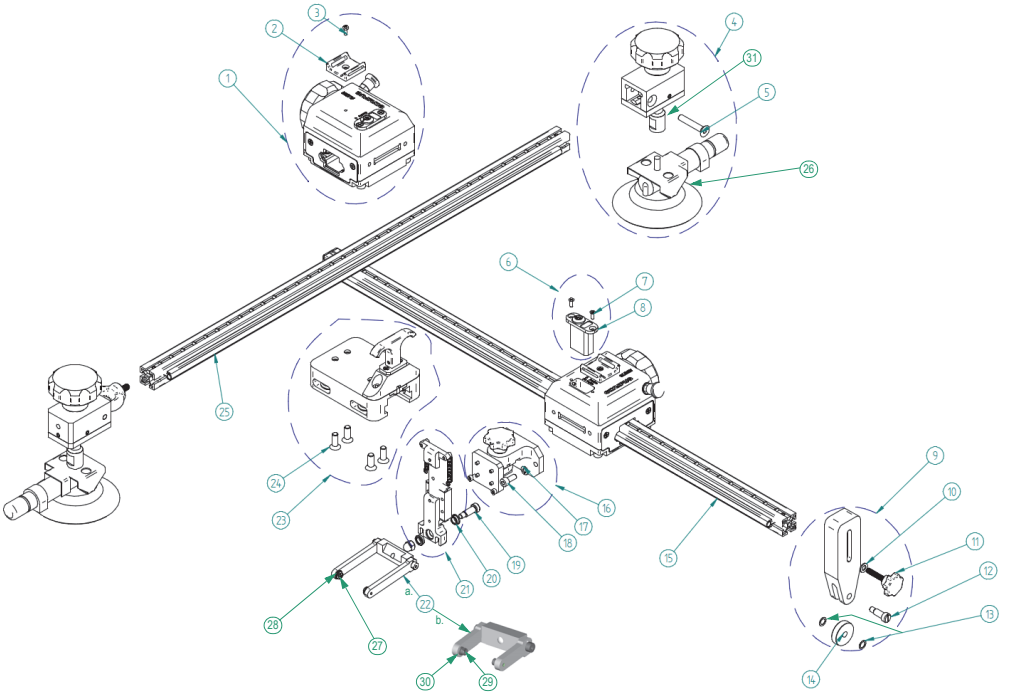

Figure 5-2 Exploded view

Table 7 Spare parts

Drawing item	Quantity	Part number	Description
1	2	Q8300938	X-Y index module, complete assembly
2	2	Q8300939	Hook and loop cable tie mounts
3	2	U8907070	M3×8 mm hexagonal screw

Table 7 Spare parts *(continued)*

Drawing item	Quantity	Part number	Description
4	2	Q8301657	A pair of 114 mm (4.5 in.) diameter, manually activated, complete vacuum cup assemblies for the GLIDER scanner.
	0[a]	U8775058	A pair of optional magnetic mounting pods (2); assembly and y-axis support
	0[a]	Q7500041	Optional venturi vacuum generator kit (items shown in Figure 2-5 on page 30): • Venturi generator • A pair of venturi-activated 102 mm (4 in.) diameter suction cups (2) • Quick connectors, 1/4 NPT (one male, one female) • Polyurethane tubing, 6 mm, black • M6×1 screws (2), 25 mm long • M6 lock washers (2)
5	2	U8907069	M6×35 mm flat-head hexagonal screw
6	2	U8775135	Encoder and screw assembly
7	4	U8906398	M3×8 mm flat-head hexagonal screw for encoder
8	2	U8908650	Encoder
9	1	U8779134	Y-axis end support assembly
10	1	U8900330	M5×1 mm flat washer for thumb screw
11	1	Q8300725	M5 thumb screw
12	1	Q8300934	10-32 shoulder screw for idler roller, OD 6.35 mm (0.25 in.), length 12.7 mm (0.5 in.)
13	2	U8775044	Washer for idler roller, ESP, ID 6.35 mm (0.25 in.), OD 9.52 mm (0.375 in.), thickness 0.10 mm (0.004 in.)
14	1	Q8300674	Idler roller
15	A.M.[b]	U8775062	Y-axis assembly 460 mm (18 in.)
	A.M.	U8775063	Y-axis assembly 610 mm (24 in.)
	A.M.	U8775064	Y-axis assembly 915 mm (36 in.)
16	1	U8909310	Pivoting support for SLA
17	4	U8900327	M5 stainless steel spring washer

Table 7 Spare parts *(continued)*

Drawing item	Quantity	Part number	Description
18	4	U8900317	M5×12 mm stainless steel hexagonal socket cap screw
19	1	U8775041	Screw for attaching yoke to bearing arm
20	2	U8775110	Bearing, ID 6.35 mm (0.25 in.), OD 9.52 mm (0.375 in.), thickness 3.18 mm (0.125 in.)
21	1	U8902465	Bearing arm for SLA
	2	U8900337	Spring for bearing arm
22 (a)	1	U8831534	Long yoke arm, 55 mm
(b)	1	Q8300931	Short yoke arm for UT probe
23	1	Q8300937	Index axis support
24	4	U8830211	M6×16 mm SS hex socket flat head cap screw
25	A.M.	U8775059	X-axis assembly 460 mm (18 in.)
	A.M.	U8775060	X-axis assembly 610 mm (24 in.)
	A.M.	U8775061	X-axis assembly 915 mm (36 in.)
	A.M.	Q9000036	X-axis assembly 1829 mm (72 in.)
26[c]	0	U8906873	One 76 mm (3 in.) diameter manual suction cup (OEM equipment sold as of 2018). Does not include the mounting post and brass plate.
	1	Q7500042	A pair of 114 mm (4.5 in.) diameter manual vacuum cups for the GLIDER scanner. Comes with mounting posts and brass plates.
27	2	U8906398	Screw, M3×8 mm PHI FLAT STAIN for 55 mm long yoke arm (U8831534)
28	2	U8721914	7.8 mm diameter wedge pivot for 55 mm long yoke arm (U8831534)
29	2	U8770530	Probe screw pivot for short yoke arm (Q8300931)
30	2	U8770531	0.040 in. yoke spacer for short yoke arm (Q8300931)
31	2	Q9000041	Articulated holder for 114 mm (4.5 in.) diameter manual suction cup (P/N: Q9000037)
	0	Q9000042	Articulated holder for 76 mm (3 in.) diameter manual suction cup (P/N: U8906873)
Not shown	A.M.	U8775302	5 m encoder cable to OmniScan MX2/SX—18×18 model

Table 7 Spare parts *(continued)*

Drawing item	Quantity	Part number	Description
Not shown	A.M.	U8775303	5 m encoder cable to OmniScan MX2/SX— 24×24 model
Not shown	A.M.	U8775304	5 m encoder cable to OmniScan MX2/SX— 36×36 model
Not shown	1	Q8300936	3 mm hexagonal key
Not shown	1	Q8300935	4 mm hexagonal key
Not shown	2	Q8300871	16 mm (5/8 in.) VELCRO brand fastener strips (unit length: 305 mm [1 ft])
Not shown	3	U8906665	16 mm (5/8 in.) VELCRO brand fastener strips, 102 mm (4 in.) long
Not shown	1	U8902321	“Y” irrigation splitter
Not shown	5	U8902320	4 mm ID irrigation tube (unit length: 305 mm [1 ft])
Not shown	2	U8900341	1/8 in. ID irrigation tube (unit length: 305 mm [1 ft])
Not shown	1	U8902317	Irrigation 8 mm valve
Not shown	1	U8901372	Irrigation coupling, 8 m to 2 × 6 mm

a. Optional
b. According to model (A.M.)
c. If the suction cup is replaced using a suction cup model that differs from the original supplied with the scanner, the scanner height is affected (for available suction cup models, see item 26). To avoid a change of scanner height, the articulated holder (item 31) must be changed as well.

6. Maintenance

The service requirements of the GLIDER scanner are minimal. Depending on operating conditions, the GLIDER scanner parts might need periodic cleaning.

NOTE

For parts adjustment and replacement procedures, see "Part Replacement and Adjustment" on page 28.

6.1 Preventive Maintenance

The GLIDER scanner does not require preventive maintenance. Only a regular inspection of the product is recommended to ensure that the GLIDER scanner functions correctly.

6.2 Unit Cleaning

The GLIDER scanner's external surfaces can be cleaned when needed.

To clean the unit

1. Ensure the unit is turned off by removing the source of power.
2. Disconnect all cables.
3. To bring the unit back to its original finish, clean the housing with a soft cloth.
4. To remove persistent stains, use a damp cloth with a soft, soapy solution. Do not use abrasive products or powerful solvents that could damage the finish.

5. Wait until the unit dries completely before reconnecting the cables.

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