



VersaMOUSE

Manual One-Axis Indexer Scanner

User's Manual

DMTA-20030-01EN — Rev. C
August 2016

This instruction manual contains essential information on how to use this Olympus 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.

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

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

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Table of Contents

Labels and Symbols	1
Important Information – Please Read Before Use	3
Intended Use	3
Instruction Manual	3
Scanner Compatibility	4
Presence of Visual Interferences or Phantom Spots	5
Safety Symbols	5
Safety Signal Words	6
Note Signal Words	6
Safety	7
Warnings	7
Equipment Disposal	8
CE (European Community)	8
WEEE Directive	8
Warranty Information	8
Technical Support	9
Introduction	11
1. Overview	13
2. Operation	17
2.1 Performing an Inspection	17
2.2 Setting up the Scanner on the OmniScan	19
3. Maintenance	23
3.1 Changing the Wheels or Replacing Rubber O-rings	23
3.2 Adjusting the Ball-Plunger Screws on the Quick-Connect Fittings	26

3.3 Unit Cleaning	27
4. Specifications	29
Appendix: Spare and Optional Parts	31
List of Figures	35
List of Tables	37
Index	39

Labels and Symbols

Safety-related labels and symbols are attached to the VersaMOUSE scanner at the locations shown in Figure i-1 on page 1, with contents listed in Table 1 on page 2. If any or all of the labels or symbols are missing or illegible, please contact Olympus.

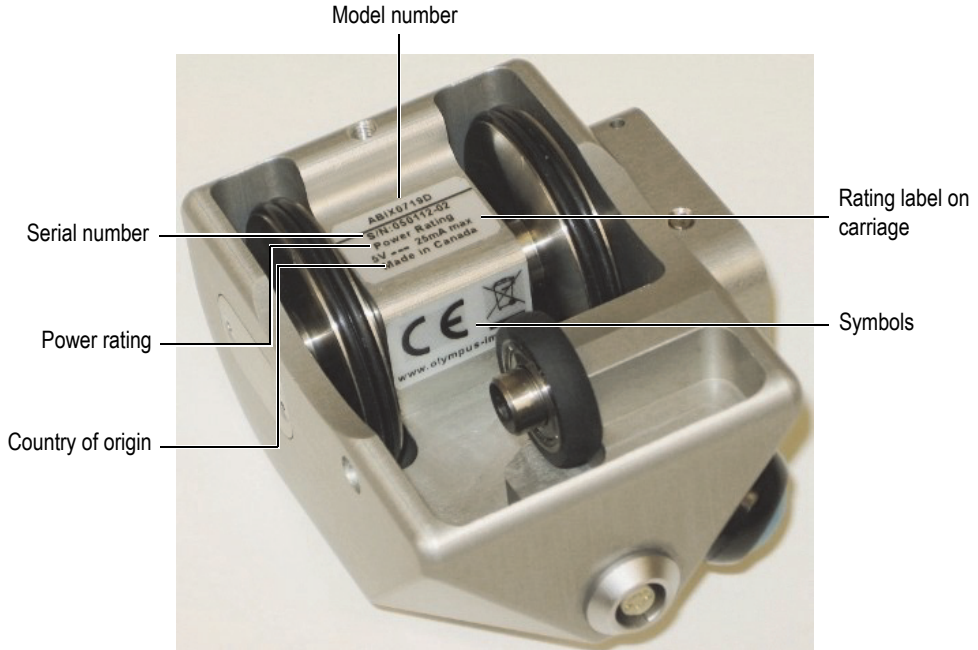






Figure i-1 Location of rating label and symbols on the VersaMOUSE scanner

Table 1 Symbols

	The WEEE symbol indicates that the product must not be disposed of as unsorted municipal waste, but should be collected separately.
	The CE marking is a declaration that this product conforms to all the applicable directives of the European Community. See the <i>Declaration of Conformity</i> for details. Contact your Olympus representative for more information.
	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.
	The direct current symbol.
S/N	The serial number is an eight (8) digit number.

Important Information — Please Read Before Use

Intended Use

The VersaMOUSE scanner is designed to perform nondestructive inspections on industrial and commercial materials. The VersaMOUSE is a manual scanner designed to provide the encoded position of the probes on pipes or plates.



WARNING

Do not use the VersaMOUSE 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 Olympus product safely and effectively. Before using this product, thoroughly review this instruction manual. Use the product as instructed.

Keep this instruction manual in a safe, accessible location.

IMPORTANT

Some of the details of components and/or software images in this manual may differ from your instrument's components or software display. However, the principles remain the same.

Scanner Compatibility

The VersaMOUSE scanner is compatible with the Olympus ancillary equipment listed in Table 2 on page 4.

**CAUTION**

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

Table 2 Ancillary equipment

Equipment	Description
OmniScan PA or FOCUS instruments	Several types of phased array instrument models can be used. One of the encoder cable adaptors listed below may be required. (See Table 7 on page 34.)
Phased array probe and wedge	Several models used (to fit 65 mm × 65 mm fork)
P/N: U8775201]	Scanner interface adaptor to connect scanner encoder cables with DE15 connector to OmniScan MX2, SX, and FOCUS PX with LEMO connector scanner interface.
P/N: U8780329	Scanner interface adaptor to connect scanner encoder cables with LEMO connector to OmniScan MX with DE15 connector scanner interface.

Table 2 Ancillary equipment (continued)

Equipment	Description
P/N: U8769010	0.3 m long adaptor LEMO female to Bendix male linking LEMO encoder cable to Focus LT
P/N: U8767107	0.3 m long adaptor DE15 female to Bendix male linking DE15 encoder cable to Focus LT

Presence of Visual Interferences or Phantom Spots

IMPORTANT

In a situation of physical proximity to powerful electromagnetic radiators, visual interferences or phantom spots may be present. These interferences are temporary and their persistence is not permanent in comparison with physical features of the inspected part.

Safety Symbols

The following safety symbols might appear on the instrument 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.



Shock hazard caution symbol

This symbol is used to alert the user to potential electric shock hazards. 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 instrument:



DANGER

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



WARNING

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



CAUTION

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

Note Signal Words

The following safety symbols could appear in the documentation of the instrument:

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

Warnings

**WARNING**

General Warnings

- Carefully read the instructions contained in this instruction manual prior to turning on the instrument.
- 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 instrument 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 instrument.
- Service instructions, when applicable, are for trained service personnel. To avoid the risk of electric shock, do not perform any work on the instrument unless

qualified to do so. For any problem or question regarding this instrument, contact Olympus or an authorized Olympus representative.

- 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.

Equipment Disposal

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

CE (European Community)



This device complies with the requirements of both directive 2014/30/EU concerning electromagnetic compatibility and directive 2014/35/EC concerning low voltage. The CE marking indicates compliance with the above directives.

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 Olympus distributor for return and/or collection systems available in your country.

Warranty Information

Olympus guarantees your Olympus product to be free from defects in materials and workmanship for a specific period, and in accordance with conditions specified in the *Olympus Scientific Solutions Americas Inc. Terms and Conditions* available at <http://www.olympus-ims.com/en/terms/>.

The Olympus 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 Olympus for assistance with the damage claim and equipment replacement, if necessary.

This instruction manual explains the proper operation of your Olympus 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, Olympus 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.

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

Technical Support

Olympus 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 at: <http://www.olympus-ims.com>.

Introduction

This manual contains instructions on assembling, installing, and operating the VersaMOUSE scanner (see Figure i-2 on page 11).

The VersaMOUSE is a scanner designed for linear encoded scans with a phased array probe. The integrated indexing button makes it ideal for 2-D mapping applications such as CFRP flat panel and corrosion inspections.

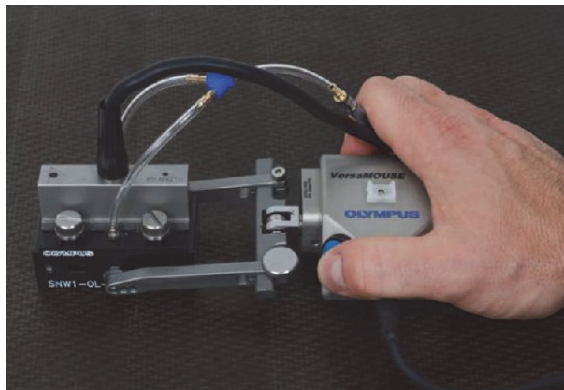


Figure i-2 VersaMOUSE scanner with the probe installed

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

- An overview of main components
- Operation
- Maintenance
- Specifications

1. Overview

The VersaMOUSE is designed for ease of adjustment and quick exchange of different probe types and sizes. The contents of a standard case are shown in Figure 1-1 on page 13.



Figure 1-1 Case contents

The VersaMOUSE's main components are shown in Figure 1-2 on page 14.

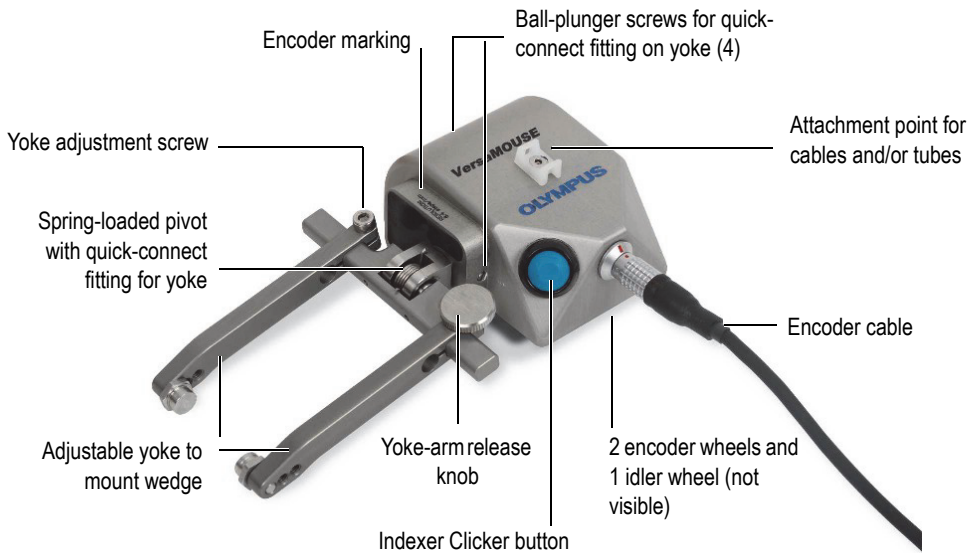


Figure 1-2 VersaMOUSE components

Adjustable yoke

Consists of two movable arms that hold the wedge, and a spring-loaded pivot.

Yoke adjustment screw

Requires an Allen key. Set it so that it centers the wedge on the pivot point.

Yoke-arm release knob

Use your finger to tighten or loosen the knob for quick wedge installation or removal.

Spring-loaded pivot

Exerts a constant downward force on the wedge, pressing it against the inspection surface. Mount the pivot on one of the quick connections provided. The most common location is on the side. A second possible location is at 90°, opposite the encoder cable.

Ball-plunger screws (quick connect)

Two screws are located on each quick connect fitting. Adjust these screws for optimum retention of the mounting pin on the spring-loaded pivot.

Encoder cable

Must be connected in the correct orientation following the alignment marks.

Wheels

The encoder-wheel revolutions track the distance traveled by the VersaMOUSE during inspection scans. The wheels on the VersaMOUSE are interchangeable (see Figure 1-3 on page 15). Magnetic wheels (optional kit, P/N: VersaMOUSE-A-MagWheel [U8775247]) can be installed for use on ferromagnetic surfaces. For more information about wheels, see “Maintenance” on page 23.

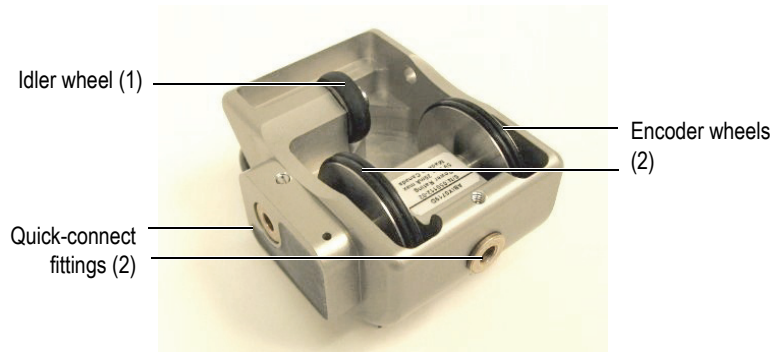


Figure 1-3 Encoder and idler wheels

Indexer Clicker **button**

Used to send an indexing signal to the instrument, which allows you to perform 2-D mapping inspections. For more information about the Indexer Clicker, see “Operation” on page 17.

2. Operation

This chapter explains basic operation of the VersaMOUSE.

2.1 Performing an Inspection

To perform a one-line inspection

1. Mount the probe on the wedge (see Figure 2-1 on page 17). Make sure that sufficient couplant is applied between the probe face and wedge.

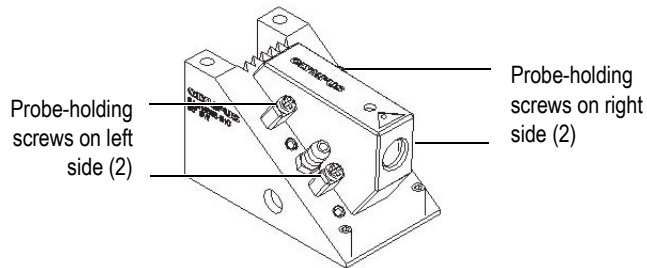


Figure 2-1 Probe and screws on wedge



CAUTION

To avoid damaging the wedge, do not overtighten the screws.

2. Install the wedge on the yoke using the yoke-arm release knob.
3. Install the yoke on the desired quick-connect fitting.
4. Connect the encoder cable to the VersaMOUSE (align the connector marks), and connect the other end of the cable to the instrument.
5. Connect the probe to the instrument.
6. Connect the couplant tubes and start the couplant flow.
7. Set the encoder-resolution parameters on the instrument (see “Setting up the Scanner on the OmniScan” on page 19).
8. Hold the VersaMOUSE securely with one hand, and the wedge with the other hand for maximum stability, and then move the unit along the inspection path in a smooth, continuous motion (see Figure 2-2 on page 18).

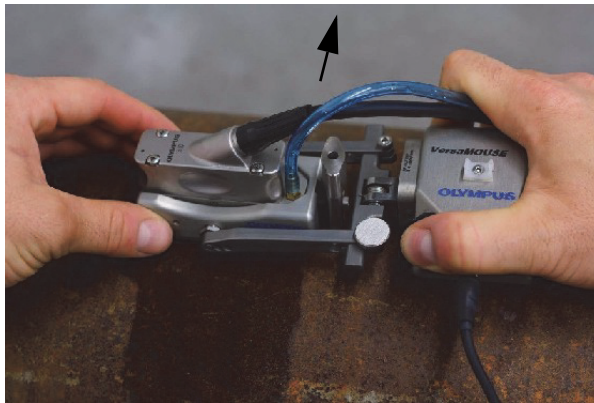


Figure 2-2 VersaMOUSE inspection sweep

To perform a 2-D mapping inspection

1. Make sure that the Indexer Clicker is set up on the OmniScan (see “Setting up the Scanner on the OmniScan” on page 19).
2. At the end of the inspection scan (see the procedure above), completely stop all motion, and then lift the VersaMOUSE to the starting point of the next inspection sweep.

IMPORTANT

If the VersaMOUSE is lifted off the surface while in motion, the encoder wheels might spin freely and give a false position reading. You must stop motion before lifting the unit off the surface.

3. Press the blue Indexer Clicker button once (release the button), and then start the next inspection sweep.
Repeat this process until all necessary sweeps are completed.

2.2 Setting up the Scanner on the OmniScan

To set up the scanner on the OmniScan

- ◆ In the OmniScan software, select **Scan > Inspection > Type = Raster Scan**.

Scanning modes

Two modes are available when using a scanner with an Indexer Clicker (OmniScan MXU 3.1 and higher):

1. Unidirectional Mode

There are two principal advantages to performing a unidirectional scan (see Figure 2-3 on page 20).

- a) The first advantage is that the same starting reference is retained for each scan, because the encoder in the scan direction is always reset to the origin value each time the clicker is pressed. This improves the precision of the position in the scan direction, because the error from the encoder-wheel motion during the index is eliminated.
- b) The second advantage is that the part is always scanned in the same direction. This reduces the scan-axis position error due to mechanical backlash between the scanner and the probe holder.

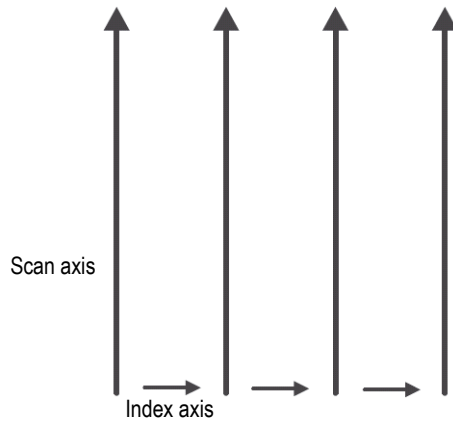


Figure 2-3 Unidirectional scan

2. Bidirectional Mode

The main advantage of a bidirectional scan is the limited back-and-forth movement of the scanner. This way, faster mapping can be achieved (see Figure 2-4 on page 20).

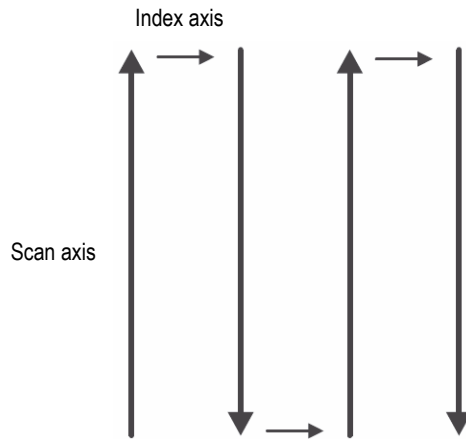


Figure 2-4 Bidirectional scan

To set up the Indexer Clicker in unidirectional mode

1. In the OmniScan MXU software, set the scanner encoder as encoder 1 (**Scan > Encoder > Encoder = 1**), and then set the encoder type to **Quad (Scan > Encoder > Type = Quad)**. Set the encoder resolution (**Scan > Encoder > Resolution = 8.4**) in steps/mm.
2. Set the Indexer Clicker as encoder 2 (**Scan > Encoder > Encoder = 2**), and then set the encoder type to **Clicker + Preset (Scan > Encoder > Type = Clicker + Preset)**.
Each time the clicker is pressed, the position on the corresponding axis is incremented according to the Resolution parameter value (which as already been set from the **Scan > Encoder > Resolution** menu) in mm/step, and the position of encoder 1 is reset to the **Origin** parameter value (which is set from the **Scan > Encoder > Origin** menu).
3. Set the C-scan dimensions.

To set up the Indexer Clicker in bidirectional mode

1. In the OmniScan MXU software, set the scanner encoder as encoder 1 (**Scan > Encoder > Encoder = 1**), and then set the encoder type to **Quad (Scan > Encoder > Type = Quad)**. Set the encoder resolution (**Scan > Encoder > Resolution = 8.4**) in steps/mm.
2. Set the Indexer Clicker as encoder 2 (**Scan > Encoder > Encoder = 2**), and then set the encoder type to **Clicker (Scan > Encoder > Type = Clicker)**. Each time the Indexer Clicker is pressed, the position on the corresponding axis is incremented according to the **Resolution** parameter value (which as already been set from the **Scan > Encoder > Resolution** menu) in mm/step.
3. Set the C-scan dimensions.

IMPORTANT

When you want to scan with an overlap between scan lines, you need to use Linear at 0° mode (**Focal Law > Configuration > Law Config. = Linear at 0°**).

If an overlap is not required, or if you want to use an angle other than 0°, you need to use Linear mode (**Focal Law > Configuration > Law Config. = Linear**), and you must set the encoder resolution linked to the Indexer Clicker (**Scan > Encoder > Resolution**) to equal the index value. The index value is available at **Scan > Area > Index Start** or **Index End** (see Figure 2-5 on page 22).

0.00	245.95
Index Start (mm)	Index End (mm) Δ61.49

Figure 2-5 Index value in OmniScan

Refer to the *OmniScan MXU Software User's Manual* (DMTA-20018-01EN [U8778404]) for more information.

3. Maintenance

The service requirements of the VersaMOUSE are minimal. The standard rubber-covered wheels can be changed to optional magnetic wheels for use on ferromagnetic surfaces. Also, the quick-disconnect fitting on the yoke might require adjustment for ease of assembly. Depending on operating conditions, the VersaMOUSE parts might need periodic cleaning.

3.1 Changing the Wheels or Replacing Rubber O-rings

Two wheels are mounted on a single shaft that connects to the encoder. The shaft and wheels are shown in a disassembled state in Figure 3-1 on page 23.

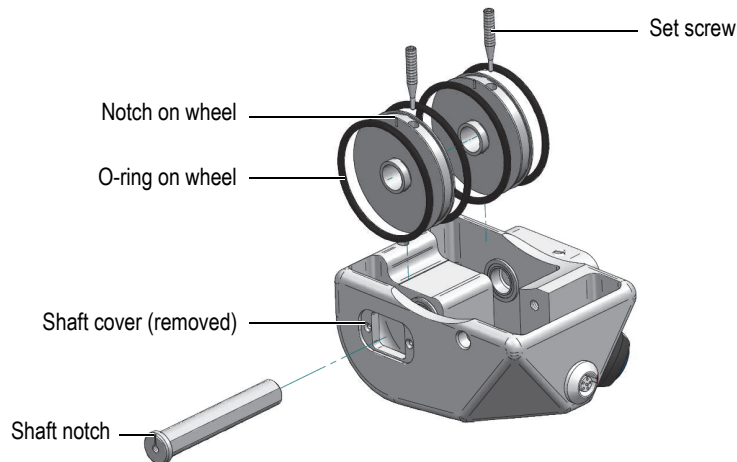


Figure 3-1 Encoder shaft and wheels

To change the encoder wheels

1. Remove the shaft cover using an Allen key (see Figure 3-2 on page 24).



Figure 3-2 Encoder-shaft cover

2. Carefully pull the O-rings away from the wheel groove to expose the set screws (see Figure 3-1 on page 23).
3. Loosen the set screws on both wheels using an Allen key.
4. Attach the puller screw (supplied with the optional magnetic kit) to the end of the shaft, and use it to pull the shaft out of the VersaMOUSE (see Figure 3-3 on page 24).



Figure 3-3 Pulling the shaft out of the VersaMOUSE

5. Remove the puller screw from the shaft.
6. Remove the wheels, and change the rubber O-rings if necessary.

- Align the notches on the shaft with the notches on the new wheel, and then, starting with the wheel closest to the shaft cover, carefully slide the shaft through each new wheel. Make sure that the notches are facing the same direction, and that the shaft is fully inserted and properly seated.
- Tighten the set screws on both wheels, making sure that the set screws are fully extended against the flat on the shaft and securely lock each wheel. Always make sure the notches are aligned when tightening the screws.
- Reinstall the shaft cover.

To change the idler wheel

- Loosen and remove the screw on the end of the idler-wheel shaft, using an Allen key (see Figure 3-4 on page 25).

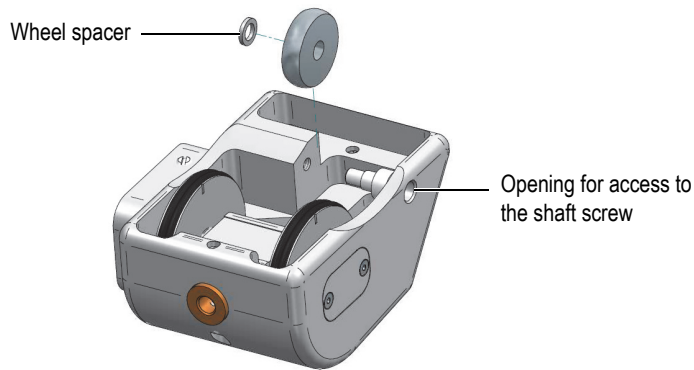


Figure 3-4 Idler wheel

- Pull out the wheel and spacer.
- Press the plastic bushing (spacer) into the magnetized wheel, then slide the shaft screw through the wheel from the other side (see Figure 3-5 on page 25).

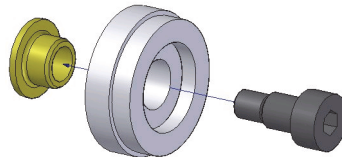


Figure 3-5 Idler-wheel assembly detail

4. Tighten the shaft screw to secure the assembly into place.

3.2 Adjusting the Ball-Plunger Screws on the Quick-Connect Fittings

The ball-plunger screws on the yoke's quick-connect fittings might require adjustment to make it easier to insert or release the yoke.

To adjust the ball-plunger screws on the quick-connect fittings

1. Locate the ball-plunger screws on the quick-connect fitting.

On the quick-release fitting located on the side of the scanner, one screw is below the opening, and the other is offset by 90°. On the second quick-release fitting, the screws are directly opposed at 180° (see Figure 3-6 on page 26).

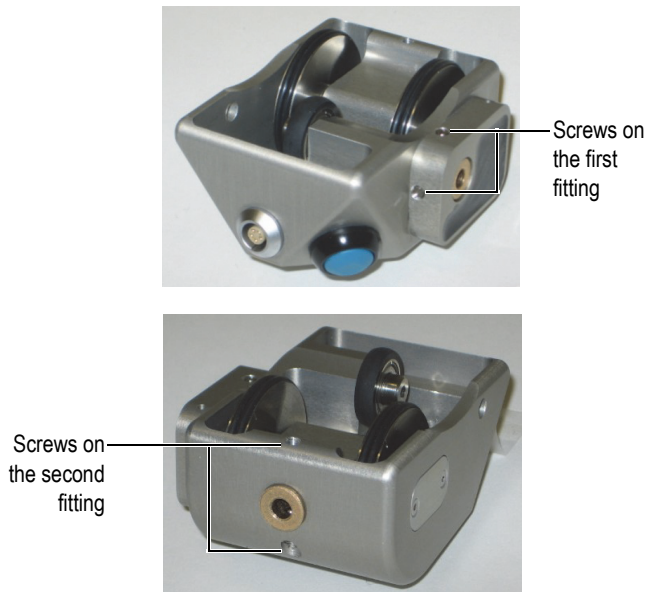


Figure 3-6 Adjustment screws for quick-release fittings

2. Slide the yoke shaft into the opening, and check the resistance as the yoke shaft slides past the ball plungers.

3. Adjust the ball plungers to obtain the desired resistance and locking force. You can also look into the quick-connect fitting hole to make sure that the two ball plungers are engaged at approximately the same distance inwards toward the center.
4. Make sure that the screws have sufficient resistance on the threads to prevent accidental loosening.
If necessary, remove the screw and apply Vibra-TITE or a similar thread locker, and then readjust the screw.

3.3 Unit Cleaning

The VersaMOUSE'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.

4. Specifications

This chapter contains general specifications for the VersaMOUSE.

Table 3 General specifications

Parameter	Value
Dimensions and weight	See Table 4 on page 30.
Encoder	Type: Quadrature
	Resolution: 8.4 steps/mm \pm 0.15 steps/mm (Encoder calibration is recommended for every setup.)
	Waterproof IP65
	Pinout: see Figure 4-1 on page 30.
	Power rating: 5 VDC, 25 mA maximum
	Frequency: 0 kHz to 1 kHz (for a maximum displacement velocity of 10 cm/s [4 in./s])
Outdoor use	Yes
Altitude	Up to 2000 m
Operating temperature	-10 °C to 50 °C.
Storage temperature	-20 °C to 60 °C.
Relative humidity (RH)	Max. 85 %, noncondensing
Wet locations	Yes
Pollution level	1
IP rating	Waterproof—designed for IP 65

Table 4 Dimensions and weight

Probe-holder position	Length in scan axis (mm)	Width (mm)	Height (mm)	Weight (kg)
Front	170	80	42	0.4
Side	80	152	42	0.4

Figure 4-1 on page 30 contains the pinout for the LEMO connector used on the OmniScan MX2 model.

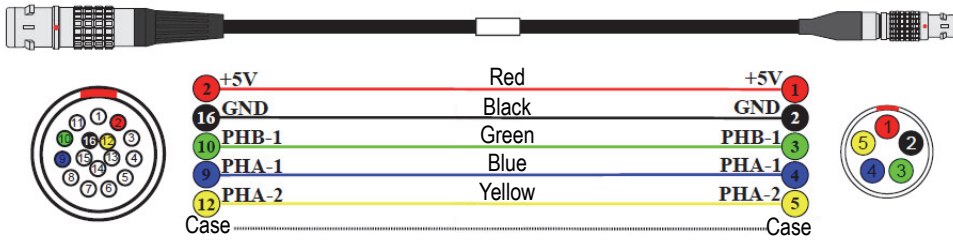


Figure 4-1 Pinout for EWIX1414 cable

Appendix: Spare and Optional Parts

This section provides information about the spare parts that are available for the VersaMOUSE scanner. Standard parts are shown in Figure 4-2 on page 32 and listed in Table 5 on page 32. Optional parts are listed in Table 6 on page 33 and the required encoder cable adaptors are listed in Table 7 on page 34.

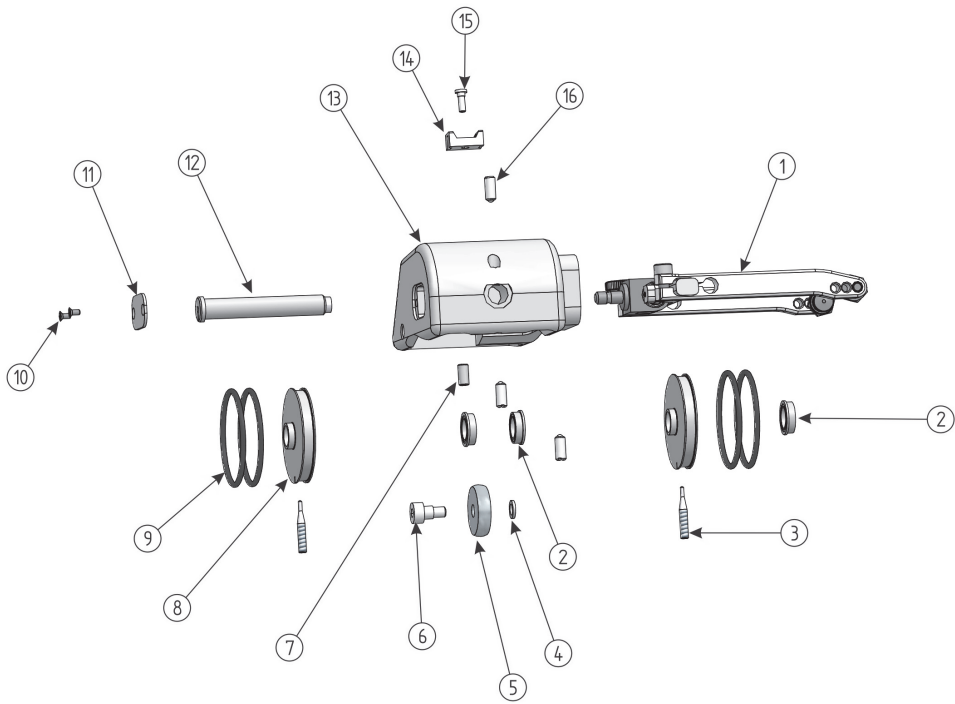


Figure 4-2 Exploded view

Table 5 Spare parts

Drawing number	Qty ^a	Part number	Part description
1	1	U8775208	Adjustable fork
2	3	U8909086	Flange bearing 8 mm ID, 12 mm OD, 3.5 mm wide
3	2	Q8300921	Locking screw
4	1	Q8300916	Stainless steel M4 washer 7 mm OD, 1 mm wide
5	1	Q8300912	Urethane mold bearing 20 mm OD
6	1	Q8300918	M4 stainless steel shoulder screw 5 mm OD × 4 mm long

Table 5 Spare parts(continued)

Drawing number	Qty ^a	Part number	Part description
7	1	Q8300917	Hexagonal s-set M4 × 8 mm stainless steel screw
8	2	Q8300923	Wheel front
9	4	Q8300915	Black o-ring 34 mm ID, 2 mm wide
10	2	U8909929	M2 × 4 mm Phillips flathead stainless steel screw
11	1	Q8300926	Protection plate
12	1	Q8300928	Shaft with magnet
13	1	Q8300925	VersaMOUSE body
14	1	Q1500156	Tie-wrap support screw #4
15	1	Q8300922	M2.5 × 6 mm hexagonal stainless steel screw (modified)
16	4	Q8300914	M4 ball plunger w/o lock

- a. This number represents the typical quantity initially included with in your scanner package.

A magnetic-wheel kit is available for maximum adherence of the wheels on ferromagnetic surfaces and improved stability. A cable adaptor for the TomoScan FOCUS LT or OmniScan MX is available, and an additional adjustable fork can also be ordered.

Table 6 Optional parts

Part	Part number	Description
VersaMOUSE-A-MagWheel	U8775247	Magnetic-wheel kit
HS-A-FORK	U8775208	Replacement adjustable fork
VersaMouse-SP-Lcable-2.5m	U8775324	Replacement encoder cable, 2.5 m long (for OmniScan MX2 and SX models)

VersaMOUSE scanners 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 7 on page 34).

Table 7 Required encoder cable adaptors

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

List of Figures

Figure i-1	Location of rating label and symbols on the VersaMOUSE scanner	1
Figure i-2	VersaMOUSE scanner with the probe installed	11
Figure 1-1	Case contents	13
Figure 1-2	VersaMOUSE components	14
Figure 1-3	Encoder and idler wheels	15
Figure 2-1	Probe and screws on wedge	17
Figure 2-2	VersaMOUSE inspection sweep	18
Figure 2-3	Unidirectional scan	20
Figure 2-4	Bidirectional scan	20
Figure 2-5	Index value in OmniScan	22
Figure 3-1	Encoder shaft and wheels	23
Figure 3-2	Encoder-shaft cover	24
Figure 3-3	Pulling the shaft out of the VersaMOUSE	24
Figure 3-4	Idler wheel	25
Figure 3-5	Idler-wheel assembly detail	25
Figure 3-6	Adjustment screws for quick-release fittings	26
Figure 4-1	Pinout for EWIX1414 cable	30
Figure 4-2	Exploded view	32

List of Tables

Table 1	Symbols	2
Table 2	Ancillary equipment	4
Table 3	General specifications	29
Table 4	Dimensions and weight	30
Table 5	Spare parts	32
Table 6	Optional parts	33
Table 7	Required encoder cable adaptors	34

Index

A

ancillary equipment 4
Australia, RCM compliance 2

B

ball plunger screw adjustment 26

C

case contents 13
CAUTION signal word 6
cautions
 avoiding wedge damage 17
 instrument compatibility 4
CE (European Community) 8
CE marking 2
changing wheels 23
cleaning, system components 27
compliance
 RCM (Australia) 2
components 13, 14
connector reference (specifications) 33

D

DANGER signal word 6
description (general) 13
direct current symbol 2
disposal, equipment 8

E

equipment disposal 8
European Community (CE) 8

G

general setup 13

I

important information 3
important notes
 avoiding encoder-wheel spinning 19
 scan overlap 21
 wedge installation 17
IMPORTANT signal word 6
inspection procedure 17
instruction manual 3
introduction 11

L

labels
 rating plate 1

M

maintenance
 ball plunger screw adjustment 26
 cleaning of components 27
 wheel replacement 23
manual, instruction 3

N

NOTE signal word 7
notes, information
 signal words 6

O

Olympus technical support 9
operating the VersaMOUSE 17
overview, VersaMOUSE 13

P

precautions

safety 7

R

rating plate, label 1

RCM mark 2

replacing wheels 23

S

safety

instrument compatibility 4

misuse of instrument 3

precautions 7

signal words 6

symbols 5

scanner *See* VersaMOUSE

serial number format 2

setup, VersaMOUSE (general) 13

signal words

information notes 6

IMPORTANT 6

NOTE 7

TIP 7

safety 6

CAUTION 6

DANGER 6

WARNING 6

spare parts 31

specifications

connector 33

general 29

support information, technical 9

symbols

CE 2

direct current 2

RCM (Australia) 2

safety 5

WEEE 2

T

technical support 9

TIP signal word 7

U

use, intended 3

V

VersaMOUSE

components 14

general setup 13

introduction 11

operation 17

overview 13

specifications 29

wheel types 15

W

WARNING signal word 6

warning symbols

general 5

shock hazard 5

warnings

general 7

misuse of instrument 3

warranty information 8

waste electrical and electronic equipment 8

WEEE directive 8

symbol 2

wheels

replacement 23

types 15