Installation guide
H-5625-8504-05-B

RENISHAW
apply innovation™

OLP40 optical lathe probe

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Before you begin

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CNC machines

CNC machine tools must always be operated by fully trained personnel in accordance with the manufacturer's instructions.

Care of the probe

Keep system components clean and treat the probe as a precision tool.

Patents

Features of the OLP40 probe, and other similar Renishaw probes, are subject of one or more of the following patents and / or patent applications:

EP 1457786
US 7285935
US 7486195

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Intended use

The OLP40 is an optical spindle probe that enables automated workpiece inspection and job set-up on multi-tasking machines and machining centres.

Safety

Information to the user

This product is supplied with non-rechargeable lithium metal batteries. Refer to the battery manufacturer's literature for specific battery operating, safety and disposal guidelines.

- Do not attempt to recharge the batteries.
- Replace the batteries only with the specified type.
- Do not mix new and used batteries in the product.
- Do not mix different types or brands of batteries in the product.
- Ensure that all batteries are inserted with the correct polarity in accordance with the instructions in this manual and indicated on the product.
- Do not store the batteries in direct sunlight.
- Do not expose the batteries to water.
- Do not expose the batteries to heat or dispose of the batteries in a fire.
- Avoid forced discharge of the batteries.
- Do not short circuit the batteries.
- Do not disassemble, apply excessive pressure, pierce, deform or subject the batteries to impact
- Do not swallow the batteries
- Keep the batteries out of the reach of children.
- If the batteries are swollen or damaged do not use them in the product and exercise caution when handling them.
- Dispose of waste batteries in accordance with your local environmental and safety laws.

Ensure that you comply with international and national battery transport regulations when transporting the batteries or this product with the batteries inserted.

Lithium metal batteries are classified as dangerous goods for transportation and require labelling and packaging in accordance with the dangerous goods regulations before being offered for transportation. To reduce the risk of shipment delays, should you need to return this product to Renishaw for any reason, do not return any batteries.

Information to the machine supplier/ installer

It is the machine supplier's responsibility to ensure that the user is made aware of any hazards involved in operation, including those mentioned in Renishaw product literature, and to ensure that adequate guards and safety interlocks are provided.

Under certain circumstances, the probe signal may falsely indicate a probe seated condition. Do not rely on probe signals to halt the movement of the machine.

Information to the equipment installer

All Renishaw equipment is designed to comply with the relevant EC and FCC regulatory requirements. It is the responsibility of the equipment installer to ensure that the following guidelines are adhered to, in order for the product to function in accordance with these regulations:

- any interface MUST be installed in a position away from any potential sources of electrical noise, i.e. power transformers, servo drives etc;
- all 0 V/ground connections should be connected to the machine 'star point' (the 'star point' is a single point return for all equipment ground and screen cables). This is very important and failure to adhere to this can cause a potential difference between grounds;
- all screens must be connected as outlined in the user instructions;
- cables must not be routed alongside high current sources, i.e. motor power supply cables etc, or be near high speed data lines;
- cable lengths should always be kept to a minimum.

Equipment operation

If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Optical safety

This product contains LEDs that emit both visible and invisible light.

OLP40 is ranked Risk Group: Exempt (safe by design).

The product was evaluated and classified using the following standard:

BS EN 62471:2008 The photobiological safety of lamps and lamp systems.

Renishaw recommends that you do not stare at or look directly into any LED device, irrespective of its risk classification.

OLP40 basics

Introduction

The OLP40 is an optical lathe probe suitable for use on all sizes of lathes and small multi-tasking machines. It is designed to resist optical interference, false triggering and shock. It is supplied with an enhanced window and metal battery cassette.

The OLP40 can be operated in either 'Modulated' or 'Legacy' optical transmission modes (see page 4.1, "Reviewing the probe settings", for further information).

When operating in 'Modulated' mode, the OLP40 becomes compatible for use with an OMM-2 or OMM-2C receiver with an OSI or OSI-D interface, or with an OMI-2 / OMI-2T / OMI-2H / OMI-2C receiver / interface, to provide substantially increased resistance to light interference.

In 'Modulated' mode, it is possible to define the probe ID. This is factory set to PROBE 1, but can be changed to PROBE 2 for use with twin probes or PROBE 3 for use with multiple probe systems.

In 'Legacy' mode, the OLP40 is compatible with an OMM receiver and an MI 12 interface, or with an OMI receiver / interface.

All OLP40 settings are configured using Trigger Logic™. This technique enables the user to review and subsequently change probe settings by deflecting the stylus whilst observing the LED display.

Configurable settings are:

- Switch-on / switch-off method
- Enhanced trigger filter setting
- Optical transmission method
- Optical power

Getting started

Three multicolour probe LEDs provide visual indication of selected probe settings.

For example:

- Switch-on and switch-off methods
- Probe status – triggered or seated
- Battery condition

System interface

The interface conveys and processes signals between the probe and CNC machine controller.

OMM-2 or OMM-2C receiver with OSI or OSI-D interface or OMI-2 / OMI-2T / OMI-2H / OMI-2C receiver / interface (modulated transmission)

The OMI-2T receiver / interface or OMM-2 receiver with OSI or OSI-D interfaces are the recommended interfaces for use with the OLP40 as they provide substantially increased resistance to light interference whilst providing the user greater flexibility to operate a multiple probe system.

OMI receiver / interface or OMM receiver with MI 12 interface (legacy transmission)

Alternative interfaces are the OMI receiver / interface or OMM receiver with the MI 12 interface.

Trigger Logic™

Trigger Logic™ (see Section 4, “Trigger Logic™”) is a method that allows the user to view and select all available mode settings in order to customise a probe to suit a specific application. Trigger Logic is activated by battery insertion and uses a sequence of stylus deflections (triggering) to systematically lead the user through the available choices to allow selection of the required mode options.

A Probe Setup app is available that simplifies this process with clear, interactive instructions and informative videos and is available for download on the App Store and Google Play.

Download on the App Store

or

GET IT ON Google Play

Current probe settings can be reviewed by simply removing the batteries for a minimum of 5 seconds, and then replacing them to activate the Trigger Logic review sequence (see page 4.1, “Reviewing the probe settings”, for further information).

Probe modes

The OLP40 probe can be set in one of three modes:

Standby mode – probe is waiting for a switch-on signal.

Operational mode – when activated by one of the switch-on methods described later in this section. The probe is switched on and ready for use.

Configuration mode – where Trigger Logic may be used to configure the following probe settings.

NOTE: A visual indication of currently selected probe settings is provided on battery insertion, by the three multicolour LEDs located within the probe window (see Section 4, “Trigger Logic™”).

Configurable settings

Switch-off methods

The following switch-off options are user-configurable.

1. Optical on / Optical off
2. Optical on / Timer off

OLP40 switch-on method	OLP40 switch-off method Switch-off options are configurable	Switch-on time
Optical on Optical switch-on is commanded by machine input.	**Optical off** Optical switch-off is commanded by machine input. A timer automatically switches the probe off 90 minutes after the last trigger if it is not switched off by machine input.	Legacy (start filter off): 0.3 seconds Legacy (start filter on): 0.8 seconds Modulated: 0.3 seconds
Optical on Optical switch-on is commanded by machine input or auto start.	**Timer off (timeout)** Timeout will occur 12, 33 or 134 seconds (user configurable) after the last probe trigger or reseat. **NOTE:** Issuing a further M-code during the timeout period will also reset the timer.	

Enhanced trigger filter

Probes subjected to high levels of vibration or shock loads may output probe trigger signals without having contacted any surface. The enhanced trigger filter improves the probe's resistance to these effects.

When the filter is enabled, a constant nominal 10 ms delay is introduced to the probe output.

It may be necessary to reduce the probe approach speed to allow for the increased stylus overtravel during the extended time delay.

The enhanced trigger filter is factory set to OFF.

Optical transmission method

Probes subjected to particular forms of light interference may accept spurious start signals.

The OLP40 can be operated in either 'Modulated' or 'Legacy' optical transmission mode.

Modulated mode

The OLP40 becomes compatible for use with the OMM-2 or OMM-2C receiver with OSI or OSI-D interface or with an OMI-2 / OMI-2T / OMI-2H / OMI-2C receiver / interface to provide substantially increased resistance to light interference.

Modulated transmission in the OLP40, is capable of providing three different coded start signals. This allows the use of two probes with an OMI-2T receiver / interface and up to three probes with an OMM-2 receiver with a OSI or OSI-D interface respectively.

Twin / multiple probe system

To operate in a twin or multiple probe system, one probe must be set to PROBE 1 start and the other probe must be set to PROBE 2 start (OMI-2T or OMM-2 with OSI or OSI-D) or PROBE 3 start (OMM-2 with OSI or OSI-D only). These settings are user configurable.

In a twin probe system, such as a spindle probe and an optical tool setting probe, the spindle probe must be set to PROBE 1 start and the tool setter to PROBE 2 start.

In a multiple probe system, with two spindle probes and one optical tool setting probe, the two spindle probes must be set to PROBE 1 and PROBE 2 start, respectively, and the tool setter must be set to PROBE 3 start.

Legacy mode

A start filter improves the probe's resistance to light interference.

When 'Legacy' (start filter on) is enabled, an additional one second delay is introduced to the probe activation (switch on) time.

It may be necessary to revise the probe program software to allow for the increased activation time.

Optical power

Where the separation between the OLP40 and the receiver is small, low optical power may be used. In this setting, the optical transmission range will be reduced, as shown on the performance envelopes, so that battery life will be extended.

Low or ultra low optical power should be used whenever possible for increased battery life.

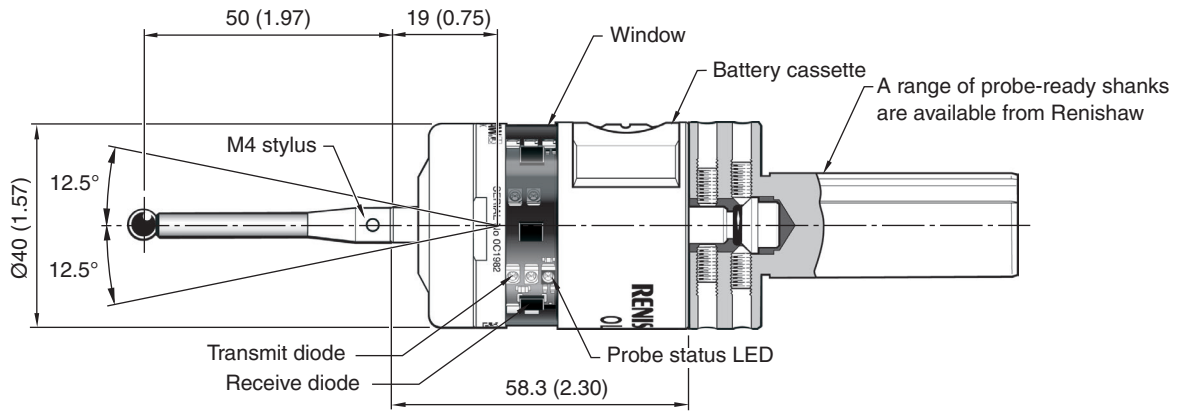
Ultra low power is recommended for any machine using the OMM-2C receiver or for use in small machining centers where the maximum separation distance between probe to receiver is less than 1.5 m (4.9 ft), for further increased battery life.

Dotted lines on the performance envelopes represent the OLP40 in low and ultra low optical power modes.

Maximum battery life is achieved when lithium-thionyl chloride (LTC) batteries are used in conjunction with ultra low power mode.

The probe is factory set to standard optical power.

OLP40 dimensions



Dimensions given in mm (in)

Stylus overtravel limits		
Stylus length	**±X / ±Y**	**+Z**
50 (1.97)	12 (0.47)	6 (0.24)
100 (3.94)	22 (0.87)	6 (0.24)

OLP40 specification

Principal application	Workpiece inspection and job set-up on all sizes of lathes and small multi-tasking machines.	
Dimensions	Length Diameter	58.3 mm (2.30 in) 40 mm (1.57 in)
Weight (without shank)	With batteries Without batteries	277 g (9.77 oz) 258 g (9.10 oz)
Transmission type	360° infrared optical transmission (modulated or legacy)	
Switch-on method	Optical on	
Switch-off methods	Optical off or Timer off	
Spindle speed (maximum)	1000 rev/min	
Operating range	Up to 5 m (16.4 ft)	
Compatible receiver / interface	**Modulated** OMM-2 or OMM-2C with OSI or OSI-D or with OMI-2 / OMI-2T / OMI-2H / OMI-2C	**Legacy** OMI / OMM with MI 12
Sense directions	±X, ±Y, +Z	
Unidirectional repeatability	1.00 µm (40 µin) 2σ (see note 1)	
Stylus trigger force (see notes 2 and 3) XY low force XY high force Z	 0.40 N, 41 gf (1.44 ozf) 0.80 N, 80 gf (2.88 ozf) 5.30 N, 540 gf (19.06 ozf)	
Stylus overtravel	XY plane +Z plane	±12.5° 6 mm (0.24 in)
Environment	IP rating	IPX8, BS EN 60529:1992+A2:2013
	IK rating	IK02, BS EN 62262:2002+A1:2021 [for glass window]
	Storage temperature	–25 °C to +70 °C (–13 °F to +158 °F)
	Operating temperature	+5 °C to +55 °C (+41 °F to +131 °F)
Battery types	2 × ½AA 3.6 V lithium-thionyl chloride (LTC)	
Battery reserve life	Approximately one week after a low battery warning is first given (based on 5% usage).	
Typical battery life	See page 2.7	

Note 1 Performance specification is tested at a standard test velocity of 480 mm/min (18.9 in/min) with a 50 mm stylus. Significantly higher velocity is possible depending on application requirements.

Note 2 Trigger force, which is critical in some applications, is the force exerted on the component by the stylus when the probe triggers. The maximum force applied will occur after the trigger point (overtravel). The force value depends on related variables, including measuring speed and machine deceleration.

Note 3 These are the factory settings; manual adjustment is possible.

Typical battery life

Modulated transmission			
2 × ½AA 3.6 V LTC batteries (typical)	Standard power	Low power	Ultra low power
Standby life	600 days	1500 days	1500 days
Light usage 1%	460 days	1000 days	1200 days
Heavy usage 5%	220 days	480 days	600 days
Continuous use	480 hours	960 hours	1350 hours

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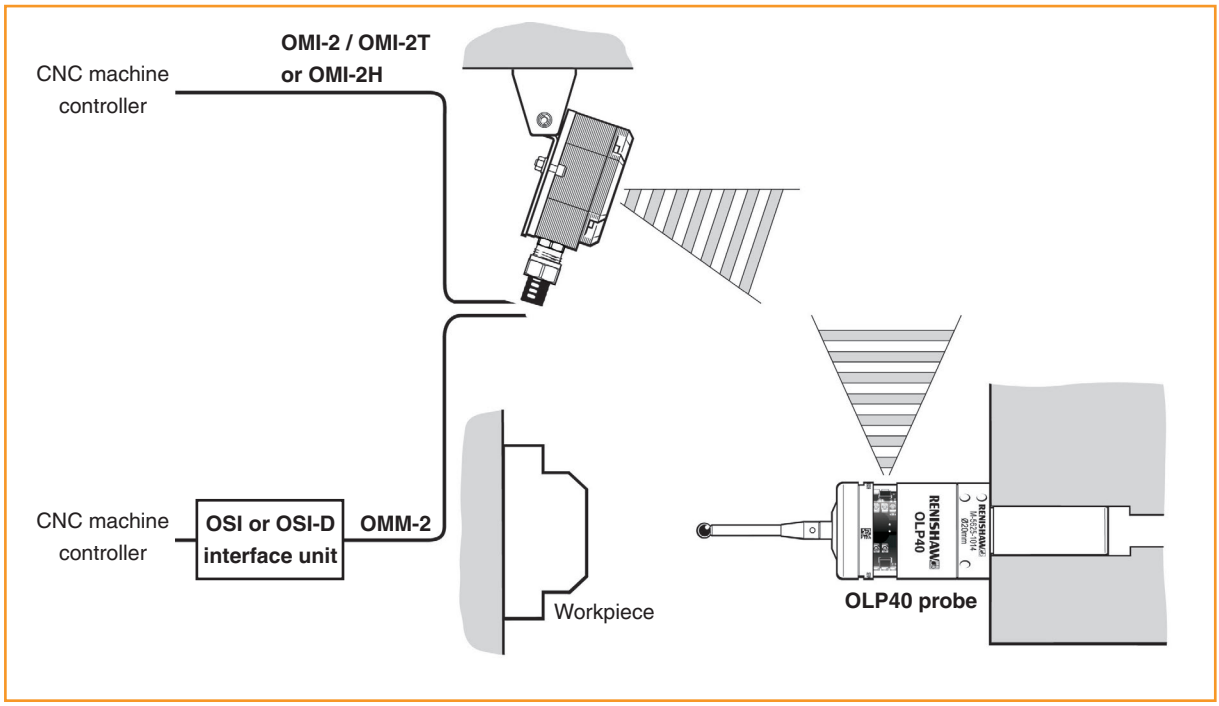
System installation

Installing the OLP40 with OMM-2 receiver with OSI or OSI-D interface or OMI-2 / OMI-2T / OMI-2H interface / receiver



Operating envelope

When used with the OMM-2 receiver with OSI or OSI-D interface or the OMI-2 / OMI-2T / OMI-2H interface / receiver, the OLP40 uses modulated transmission.

Natural reflective surfaces within the machine may increase the signal transmission range.

Coolant and swarf residue accumulating on the probe or receiver/interface windows will have a detrimental effect on transmission performance. Wipe clean as often as necessary to maintain unrestricted transmission.

WARNING: Ensure the machine tool is in a safe condition and power is removed before removing covers. Only qualified persons should adjust switches.

CAUTION: If two or more systems are operating in close proximity to each other, take care to ensure that signals transmitted from the OLP40 on one machine are not received by the receiver on the other machine, and vice versa. When this is the case it is recommended that the OLP40 low or ultra low optical power is used and that the low range setting is used on the receiver.

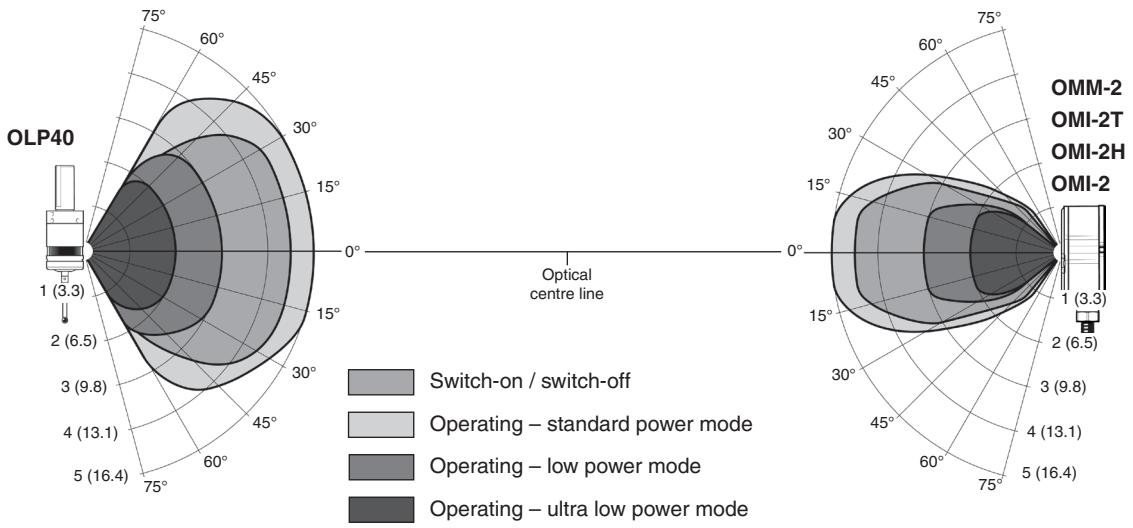
Positioning the OMM-2 receiver with OSI or OSI-D interface or the OMI-2 / OMI-2T / OMI-2H interface / receiver

WARNING: Ensure the machine tool is in a safe condition and power is removed before removing covers. Only qualified persons should adjust switches.

To assist in finding the optimum position for the OMM-2 receiver with OSI or OSI-D interface or the OMI-2 / OMI-2T / OMI-2H receiver / interface, signal condition is indicated on a multicoloured LED.

Performance envelope when using the OLP40 with a OMM-2 receiver or OMI-2 / OMI-2T or OMI-2H interface / receiver (modulated transmission)

The diodes of the OLP40 and the OMM-2 receiver / OMI-2 / OMI-2T / OMI-2H interface / receiver must be in each other's field of view and within the performance envelope shown. The OLP40 performance envelope is based on the optical centre line of the OMM-2 / OMI-2 / OMI-2T / OMI-2H being at 0° and vice versa.



Typical plot at 20 °C (68 °F) 360° transmission around probe axis in m (ft)

Preparing the OLP40 for use

Fitting the stylus

1

2

M-5000-3707

Stylus weak link

NOTE: Steel styli must be used for optimum metrology performance. Do not use a weak link with ceramic or carbon fibre styli.

Fitting a stylus with a weak link onto the OLP40

In the event of excessive stylus overtravel, the weak link is designed to break, thereby protecting the probe from damage.

Take care to avoid stressing the weak link during assembly.

Removing a broken weak link

Installing the batteries

NOTES:

See page 5.2, “Changing the batteries”, for a list of suitable battery types.

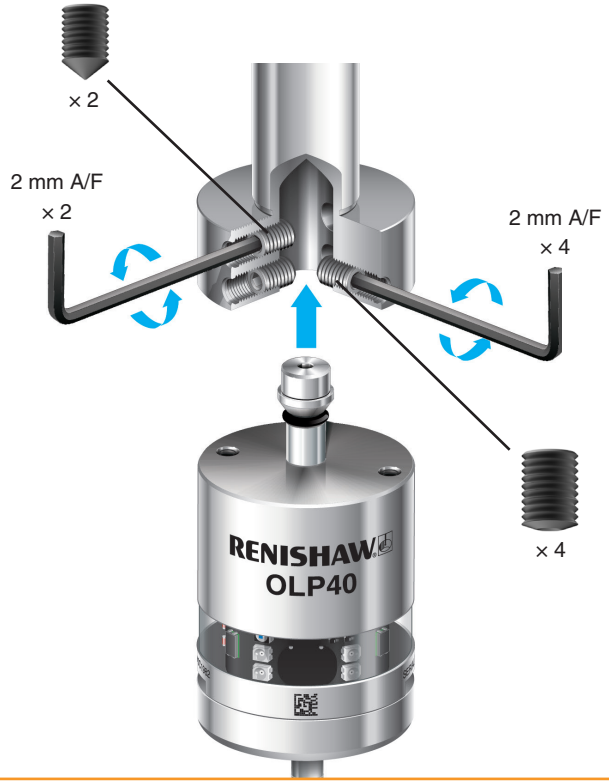
If dead batteries are inadvertently inserted, the LEDs will remain a constant red.

Do not allow coolant or debris to enter the battery compartment. When inserting batteries, check that the battery polarity is correct.

After the batteries have been inserted, the LEDs will display the current probe settings, for details, (see page 4.1, “Reviewing the probe settings”, for further information).

Mounting the probe on a shank

1

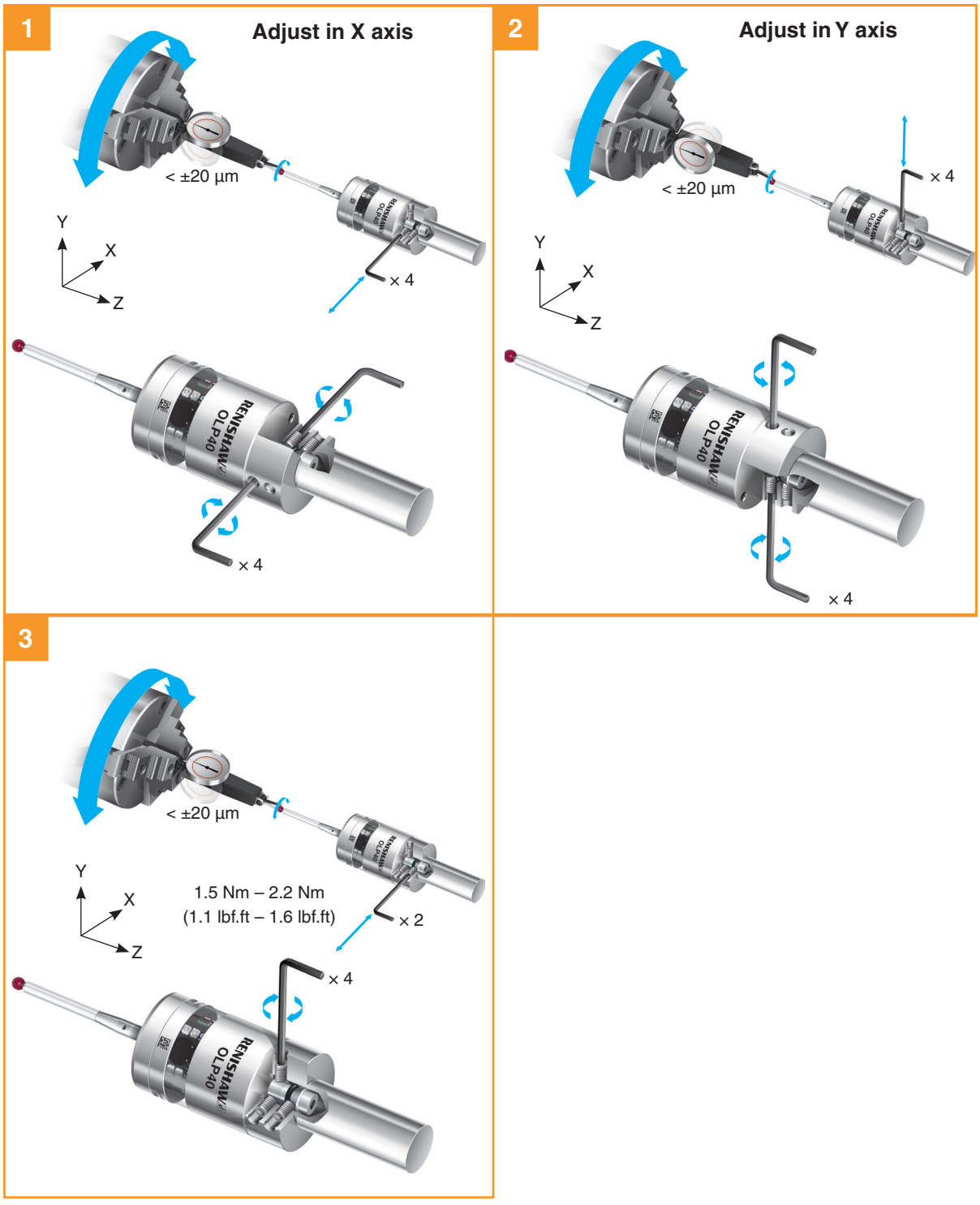


2

Stylus on-centre adjustment

NOTES:

If a probe and shank assembly is dropped, it must be rechecked for correct on-centre adjustment. Do not hit or tap the probe to achieve on-centre adjustment.



Stylus trigger force and adjustment

Spring force within the probe causes the stylus to sit in a unique position and return to this position following each stylus deflection.

Stylus trigger force is set by Renishaw. The user should only adjust trigger force in special circumstances, for example, where there is excessive machine vibration or insufficient force to support the stylus weight.

To adjust the trigger force, turn the adjusting screw anticlockwise (as shown) to reduce the force (more sensitive); eventually it reaches a stop. Turn the adjusting screw clockwise (as shown) to increase the force (less sensitive). If the internal screw becomes disengaged, remove any pressure on the stylus and turn the key anticlockwise to re-engage the thread.

Trigger forces in the XY plane vary around the stylus and depend on trigger direction.

Stylus trigger force adjustment and use of styli other than test stylus types may cause probe repeatability to differ from the calibration certificate results.

Factory setting

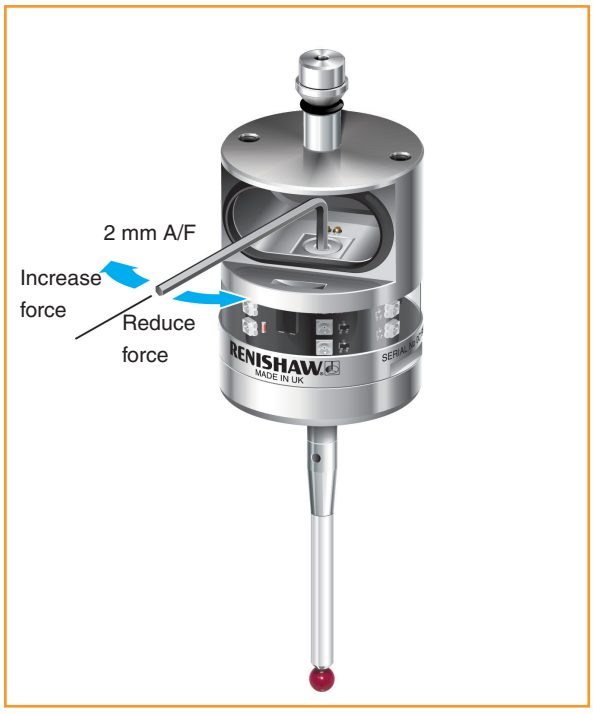
XY low force	0.40 N / 41 gf (1.44 ozf)
XY high force	0.80 N / 82 gf (2.88 ozf)
Z	5.30 N / 540 gf (19.06 ozf)

Maximum setting

XY low force	0.80 N / 82 gf (2.88 ozf)
XY high force	1.60 N / 163 gf (5.76 ozf)
Z	10.0 N / 1020 gf (35.97 ozf)

Minimum setting

XY low force	0.30 N / 31 gf (1.08 ozf)
XY high force	0.6 N / 61 gf (2.16 ozf)
Z	4.0 N / 408 gf (14.39 ozf)



Calibrating the OLP40

Why calibrate a probe?

An inspection probe is just one component of the measurement system which communicates with the machine tool. Each part of the system can introduce a constant difference between the position that the stylus touches and the position that is reported to the machine. If the probe is not calibrated, this difference will appear as an inaccuracy in the measurement. Calibration of the probe allows the probing software to compensate for this difference.

During normal use, the difference between the touch position and the reported position does not change, but it is important that the probe is calibrated in the following circumstances:

- when a probe system is to be used for the first time;
- when the enhanced trigger filter delay is changed;
- when a new stylus is fitted to the probe;
- when it is suspected that the stylus has become distorted or that the probe has been crashed;
- at regular intervals to compensate for mechanical changes of your machine tool;
- if repeatability of relocation of the probe shank is poor. In this case, the probe may need to be recalibrated each time it is selected.

On lathes without a Y axis, it is important to set the tip of the stylus to the spindle centre line, (see “Stylus on-centre adjustment” earlier in this section), to ensure that the measurement is made on the full diameter of the hole/ring or shaft/ball. Otherwise the resulting (cosine) error will be proportional to the difference between the calibration diameter and the current feature diameter. This effect is only large enough to detect on diameters less than 50 mm (1.97 in). On larger diameters it can safely be ignored.

On lathes with a Y axis an additional adjustment to the Y axis position can be made prior to measurement to ensure that the stylus tip is on the spindle centre line.

Three different operations are to be used when calibrating a probe. They are:

- calibrating either in a bored hole or on a turned diameter of known position;
- calibrating either in a ring gauge or on a datum sphere;
- calibrating the probe length.

Calibrating in a bored hole or on a turned diameter

Calibrating a probe, either in a bored hole or on a turned diameter of known size, automatically stores values for the offset of the stylus ball to the spindle centre line. The stored values are then used automatically in the measuring cycles. Measured values are compensated by these values so that they are relative to the true spindle centre line.

Calibrating in a ring gauge or on a datum sphere

Calibrating a probe either in a ring gauge or on a datum sphere with a known diameter automatically stores one or more values for the radius of the stylus ball. The stored values are then used automatically by the measuring cycles to give the true size of the feature. The values are also used to give true positions of single surface features.

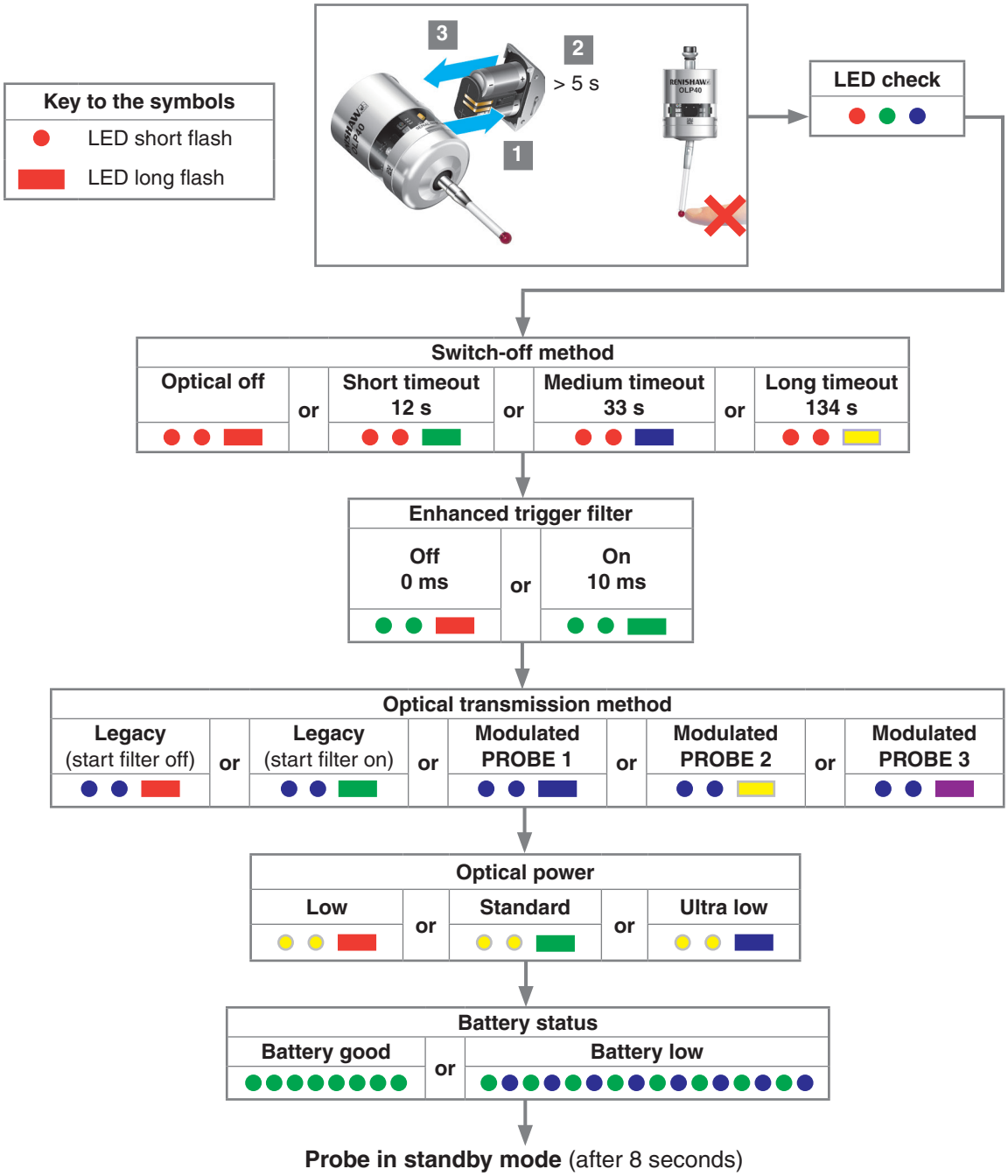
NOTE: The stored radius values are based on the true electronic trigger points. These values are different from the physical sizes.

Calibrating the probe length

Calibrating a probe on a known reference surface determines the length of the probe, based on the electronic trigger point. The stored value for length is different from the physical length of the probe assembly. Additionally, the operation can automatically compensate for machine and fixture height errors by adjusting the probe length value that is stored.

Trigger Logic™

Reviewing the probe settings



Probe settings record

This page is provided to note your probe's settings.

			✓ tick: Factory settings	New settings
Switch-on method	Optical Switch-on		✓	
Switch-off method	Optical off	● ● ▬	✓	
	Short timeout (12 s)	● ● ▬		
	Medium timeout (33 s)	● ● ▬		
	Long timeout (134 s)	● ● ▬		
Enhanced trigger filter	Off (0 ms)	● ● ▬	✓	
	On (10 ms)	● ● ▬		
Optical transmission method	Legacy (start filter off)	● ● ▬		
	Legacy (start filter on)	● ● ▬		
	Modulated PROBE 1	● ● ▬	✓	
	Modulated PROBE 2	● ● ▬		
	Modulated PROBE 3	● ● ▬		
Optical power	Low	● ● ▬		
	Standard	● ● ▬	✓	
	Ultra low	● ● ▬		

Factory settings are for kit A-5625-2001 only.

OLP40 serial no .....

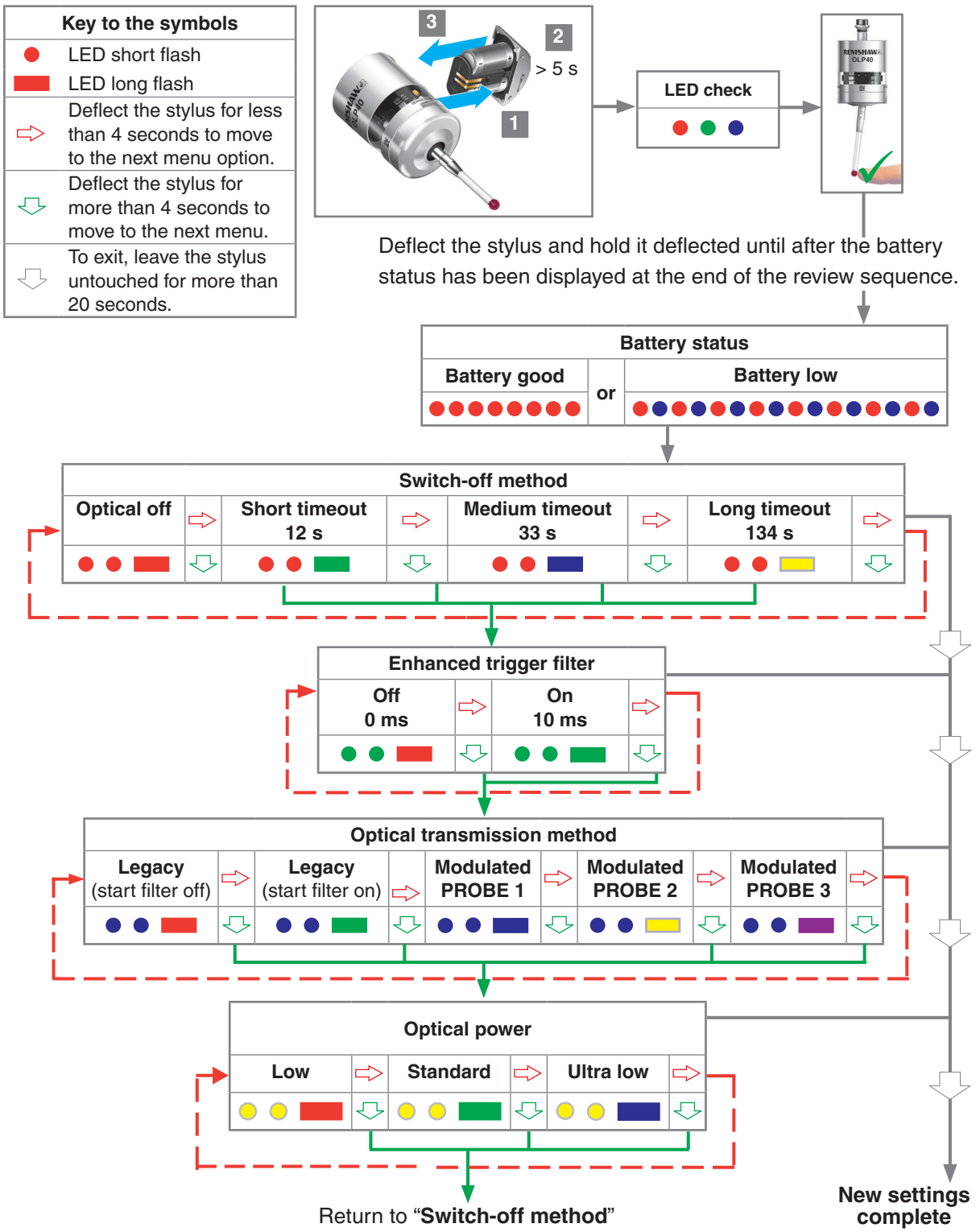
Changing the probe settings

Insert the batteries or, if they have already been installed, remove them for five seconds and then refit them.

Following the LED check, immediately deflect the stylus and hold it deflected until eight red flashes have been observed (if the battery power is low, each red flash will be followed by a blue flash).

Keep the stylus deflected until the "**Switch-off method**" setting is displayed, then release it.

CAUTION: Do not remove the batteries whilst in configuration mode. To exit, leave the stylus untouched for more than 20 seconds.



Master reset function

OLP40 features a master reset function to assist users who have mistakenly changed the probe settings into an unintended state.

The application of the master reset function will clear all current probe settings and return the probe to default settings.

The default settings are as follows:

- Optical switch-on
- Optical switch-off
- Enhanced trigger filter off
- Modulated PROBE 1
- Standard optical power

The default settings may not be representative of the required probe settings. Further configuration of OLP40 may subsequently be necessary to achieve the required probe settings.

To reset the probe

1. Insert the batteries or, if they have already been installed, remove them for five seconds and then refit them.

   Following the LED check, immediately deflect the stylus and hold it deflected until eight red flashes have been observed (if the battery power is low, each red flash will be followed by a blue flash).

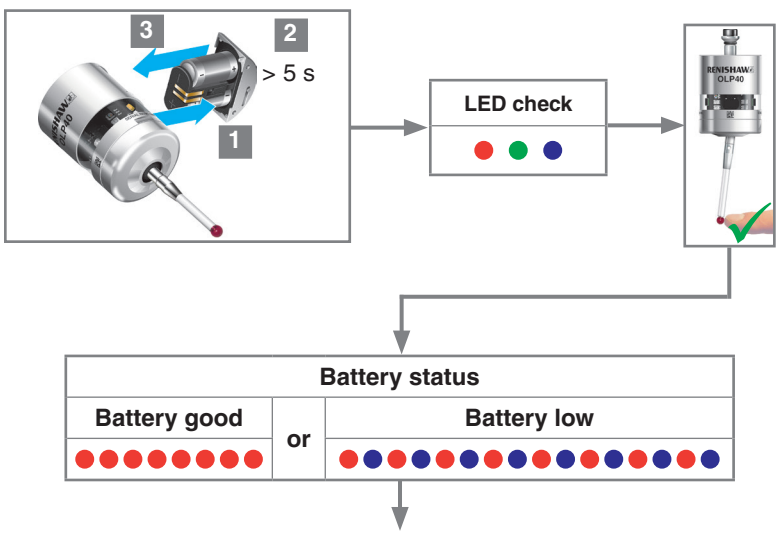
   Keep the stylus deflected until the "**Switch-off method**" setting is displayed, then release it.

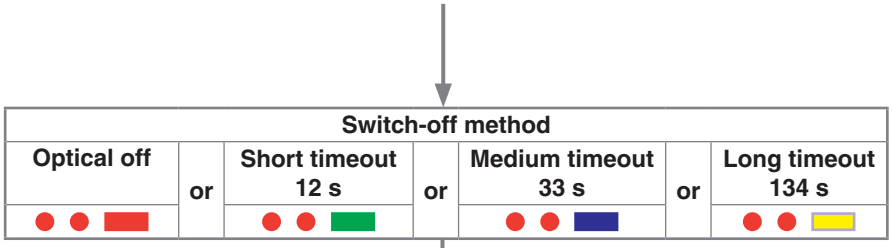
2. Hold the stylus deflected for 20 seconds. After this the status LEDs will proceed to flash yellow eight times. A confirmation for master reset is required, if nothing is done the probe will timeout.

   To confirm that a master reset is required, release the stylus and then hold the stylus deflected again until the eight yellow flash sequence has ended. This action will clear all probe settings and return the probe to default settings. Following an LED check the OLP40 will then go back into Trigger Logic and will display "**Switch-off method**".

3. Further configuration using Trigger Logic may be necessary to achieve the required probe settings.

1.

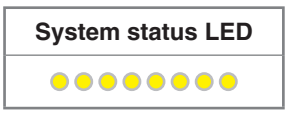


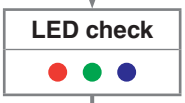


2.

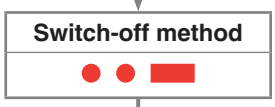
Deflect the stylus for 20 seconds until the status LEDs start to flash yellow eight times.

Whilst the status LEDs are flashing yellow to confirm that a master reset is required, release the stylus and then hold the stylus deflected again until the eight yellow flash sequence has ended.





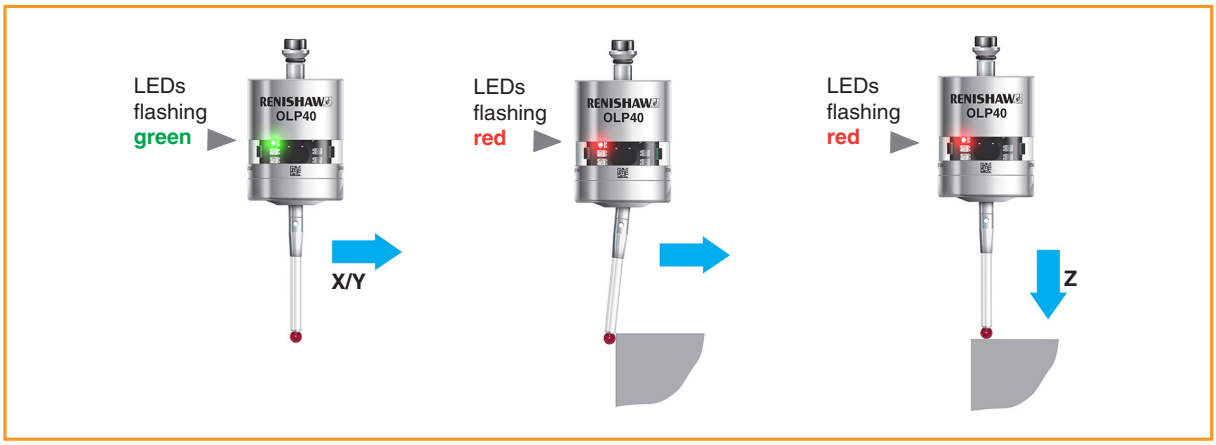
Previous settings have been cleared. The probe now has default settings.



Probe is now back in the Trigger Logic menu and will display "**Switch-off method**".

3. Configure probe settings as required using Trigger Logic

Operating mode



Probe status LEDs

LED colour	Probe status	Graphic hint
Flashing green	Probe seated in operating mode	
Flashing red	Probe triggered in operating mode	
Flashing green and blue	Probe seated in operating mode – low battery	
Flashing red and blue	Probe triggered in operating mode – low battery	
Constant red	Battery dead	
Flashing red or Flashing red and green or Sequence when batteries are inserted	Unsuitable battery	

NOTE: Due to the nature of lithium-thionyl chloride batteries, if a “low battery” LED warning is ignored, it is possible for the following sequence of events to occur:

1. When the probe is active, the batteries discharge until battery power becomes too low for the probe to operate correctly.
2. The probe stops functioning, but then reactivates as the batteries recover sufficiently to provide the probe with power.
3. The probe begins to run through the LED review sequence (see page 4.1, “Reviewing the probe settings”, for further information).
4. Again, the batteries discharge and the probe ceases to function.
5. Again, the batteries recover sufficiently to provide the probe with power, and the sequence repeats itself.

Maintenance

Maintenance

You may undertake the maintenance routines described in these instructions.

Further dismantling and repair of Renishaw equipment is a highly specialised operation, which must be carried out at an authorised Renishaw Service Centre.

Equipment requiring repair, overhaul or attention under warranty should be returned to your supplier.

Cleaning the probe

Wipe the window of the probe with a clean cloth to remove machining residue. This should be done on a regular basis to maintain optimum transmission.

CAUTION: The OLP40 has a glass window. Handle with care if broken to avoid injury.

Changing the batteries

CAUTIONS:

Do not leave dead batteries in the probe.

When changing batteries, do not allow coolant or debris to enter the battery compartment.

When changing batteries, check that the battery polarity is correct.

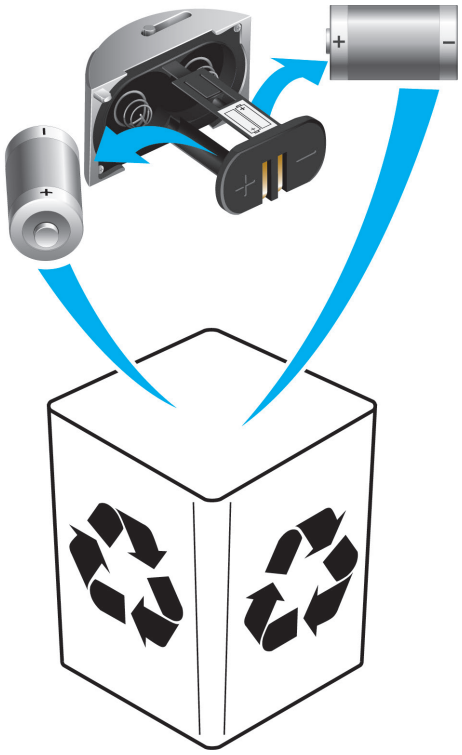
Take care to avoid damaging the battery cassette gasket.

Only use specified batteries.

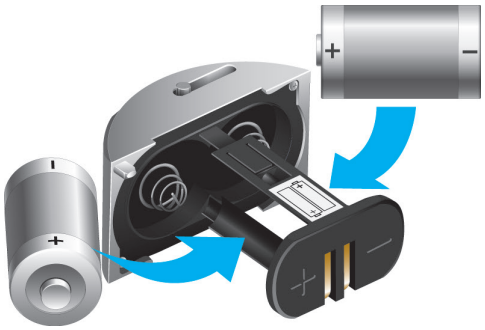
Dispose of dead batteries in accordance with local regulations. Never dispose of batteries in a fire.

1

2



3



NOTES:

After removing the old batteries, wait more than 5 seconds before inserting the new batteries.

Do not mix new and used batteries or battery types, as this will result in reduced life and damage to the batteries.

Always ensure that the cassette gasket and mating surfaces are clean and free from dirt before reassembly.

If dead batteries are inadvertently inserted, the LEDs will remain a constant red.

Battery type					
½ AA lithium-thionyl chloride (3.6 V) × 2					
✓	**Saft:** **Tadiran:** **Xeno:**	LS 14250 SL-750 XL-050F	✗	**Dubilier:** **Maxell:** **Sanyo:** **Tadiran:** **Varta:**	SB-AA02 ER3S CR 14250SE SL-350, SL-550, TL-4902, TL-5902, TL-2150, TL-5101 CR ½AA

4

5

OLP40 eyelid

The OLP40 is fitted with a metal eyelid that protects the internal components of the probe from hot chip and coolant environment. Dirt may accumulate in the cavity underneath the metal eyelid seal.

To remove this dirt, once a month, remove the front cap (using a flat blade screwdriver or a coin) and then remove all of the residue with a low-pressure jet of coolant.

CAUTION: Do not use a sharp tool or a degreasing agent.

The cleaning interval may be extended or reduced, depending on the rate at which dirt accumulates. If the inner diaphragm is damaged, return the probe to your supplier for repair.

Reassembling the probe

CAUTION: Do not use the probe with the cap removed. Check that the probe is firmly secured in its mounting.

1

Apply a coin or a flat blade screwdriver to both sides to sequentially lever the front cap from the probe body.

2

3

4

Fault-finding

Symptom	Cause	Action
Probe fails to power up (no LEDs illuminated or fails to indicate current probe settings).	Dead batteries.	Change batteries.
	Unsuitable batteries.	Fit suitable batteries.
	Batteries inserted incorrectly.	Check battery insertion/polarity.
	Batteries removed for too short a time and probe has not reset.	Remove batteries for a minimum of 5 seconds.
	Poor connection between battery cassette mating surfaces and contacts.	Remove any dirt and clean the contacts before reassembly.
Probe fails to switch on.	Wrong transmission mode selected.	Reconfigure transmission mode.
	Dead batteries.	Change batteries.
	Unsuitable batteries.	Fit suitable batteries.
	Batteries inserted incorrectly.	Check battery insertion/polarity.
	Probe out of range/not aligned with receiver.	Check alignment and if receiver fixing is secure.
	Optical/magnetic interference.	Check for interfering lights or motors.
	Transmission beam obstructed.	Check that the OLP40 and receiver windows are clean and remove any obstruction.
	No receiver start signal.	Check start signal by reviewing receiver start LED. Refer to relevant user's guide.

Symptom	Cause	Action
Machine stops unexpectedly during a probing cycle.	Optical communication obstructed.	Check interface / receiver and remove obstruction.
	Interface / receiver / machine fault.	Refer to interface / receiver / machine user's guide.
	Dead batteries.	Change batteries.
	False probe trigger.	Enable enhanced trigger filter.
	Probe unable to find target surface.	Check that part is correctly positioned and that stylus has not broken.
	Adjacent probe.	Reconfigure adjacent probe to a lower power mode and reduce range of receiver.
Probe crashes.	Workpiece obstructing probe path.	Review probing software.
	Probe length offset missing.	Review probing software.
	Controller wired to respond to tool setter instead of inspection probe.	Review installation wiring.

Symptom	Cause	Action
Poor probe repeatability and/or accuracy.	Debris on part or stylus.	Clean part and stylus.
	Poor tool change repeatability.	Redatum probe after each tool change.
	Loose probe mounting on shank or loose stylus.	Check and tighten as appropriate.
	Excessive machine vibration.	Enable enhanced trigger filter. Eliminate vibrations.
	Calibration out of date and/or incorrect offsets.	Review probing software.
	Calibration and probing speeds not the same.	Review probing software and make speeds the same.
	Calibration feature has moved.	Correct the position.
	Measurement occurs as stylus leaves surface.	Review probing software.
	Measurement occurs within the machine's acceleration and deceleration zone.	Review probing software and probe filter settings.
	Probing speed too high or too slow.	Perform simple repeatability trials at various speeds.
	Temperature variation causes machine and workpiece movement.	Minimise temperature changes.
	Machine tool faulty.	Perform health checks on machine tool.

Symptom	Cause	Action
Probe fails to switch off.	Incorrect “switch-off” method configured.	Reconfigure to optical off mode.
	Optical/magnetic interference.	Check for interfering lights or motors. Consider removing the interfering source.
	Probe is inadvertently switched on by the receiver when using autostart.	Check position of receiver. Reduce receiver signal strength.
	Probe out of range.	Review performance envelopes.
	Probe is regularly falsely switched on by light interference.	Enable optical transmission legacy mode (start filter on), or consider upgrading to modulated system.
	Transmission beam obstructed.	Check that the probe and receiver windows are clean, and remove any obstruction.
Probe fails to switch off (where timer off is required).	Incorrect switch-off method configured.	Check configuration and alter as required.
	Probe placed in carousel when in timeout mode. Timer can be reset by carousel activity.	Consider using a carbon fibre stylus.
		Enable enhanced trigger filter.
		Shorten timeout setting.
		Consider use of optical on/optical off setting.
Probe false triggers.	Excessive machine vibration or heavy stylus.	Enable enhanced trigger filter. Adjust probe trigger force.

Parts list

Item	Part number	Description
OLP40	A-5625-2001	OLP40 probe with batteries, tools and product card (set to optical on / optical off) – modulated transmission, PROBE 1 start.
OLP40	A-5625-2002	OLP40 probe with batteries, tools and product card (set to optical on / time off 134 sec) – modulated transmission, PROBE 1 start.
Stylus	A-5000-3709	PS3-1C ceramic stylus 50 mm long with Ø6 mm ball.
Batteries	P-BT03-0007	½AA battery – lithium-thionyl chloride (pack of two).
Battery cassette	A-5625-1166	OLP40 metal battery cassette assembly.
Seal	A-4038-0301	Seal for OLP40 battery cassette.
Tools	A-4071-0060	Probe tool kit comprising: Ø1.98 mm stylus tool, 2 mm A/F hexagon key and shank grubscrews (× 6).
Styli tool	M-5000-3707	Tool for tightening/releasing styli.
OMI-2	A-5191-0049	OMI-2 complete with cable 8 m (26.25 ft) long.
OMI-2	A-5191-0050	OMI-2 complete with cable 15 m (49 ft) long.
OMI-2T	A-5439-0049	OMI-2T complete with cable 8 m (26.25 ft) long.
OMI-2T	A-5439-0050	OMI-2T complete with cable 15 m (49 ft) long.
OMM-2	A-5492-0049	OMM-2 with cable 8 m (26.25 ft), tool kit and product card.
OMM-2	A-5492-0050	OMM-2 with cable 15 m (49 ft), tool kit and product card.
OSI interface	A-5492-2000	OSI (multiple probe mode) with DIN rail mounting, terminal block and quick-start guide.
OSI interface	A-5492-2010	OSI (single probe mode) with DIN rail mounting, terminal block and product card.
OSI-D interface	A-5492-3000	OSI-D (multiple probe mode) with DIN rail mounting, terminal block and product card.
OSI-D interface	A-5492-3010	OSI-D (single probe mode) with DIN rail mounting, terminal block and product card.
Eyelid service	A-5625-0005	OLP40 eyelid service kit.
Weak link	A-2085-0068	Weak link (part no. M-2085-0009 × 2) and 5 mm A/F spanner.
Mounting bracket	A-2033-0830	Mounting bracket with fixing screws, washers and nuts.
Shank	A-5625-1003	Parallel shank kit Ø25 mm.
Shank	A-5625-1007	Parallel shank kit Ø1 in.

Item	Part number	Description
Publications. These can be downloaded from our website at **www.renishaw.com**.		
OMI-2	H-5191-8504	Installation guide: for the set-up of the OMI-2.
OMI-2T	H-5439-8510	Installation guide: for the set-up of the OMI-2T.
OSI/OSI-D with OMM-2	H-5492-8504	Installation guide: for the set-up of the OSI/OSI-D interface with OMM-2.
Styli	H-1000-3200	Technical specifications guide: Styli and accessories or visit our Online store at **www.renishaw.com/shop.**
Probe software	H-2000-2298	Data sheet: Probe software for machine tools – programs and features.
Parallel shanks	H-2000-2377	Data sheet: Parallel shanks for lathe probes.

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