

OSP60 SPRINT™ optical scanning probe



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Before you begin

Before you begin

Disclaimer

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All other brand names and product names used in this document are trade names, trade marks, or registered trade marks of their respective owners.

Warranty

Equipment requiring attention under warranty must be returned to your equipment supplier.

Unless otherwise specifically agreed in writing between you and Renishaw, if you purchased the equipment from a Renishaw company, the warranty provisions contained in Renishaw's **CONDITIONS OF SALE** apply. You should consult these conditions in order to find out the details of your warranty but, in summary, the main exclusions from the warranty are if the equipment has been:

- neglected, mishandled or inappropriately used; or
- modified or altered in any way except with the prior written agreement of Renishaw.

If you purchased the equipment from any other supplier, you should contact them to find out what repairs are covered by their warranty.

Changes to equipment

Renishaw reserves the right to change equipment specifications without notice.

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 OSP60 and other similar Renishaw products, are the subject of one or more of the following patents and/or patent applications:

BR 2010/103258	JP 4062515
CN 100461049	JP 4294101
CN 101166953	JP 4578771
CN 101432592	JP 4726303
CN 101622513	JP 4754427
CN 102348957	JP 5210536
CN 103328919	JP 5238714
CN 103562672	JP 5244786
CN 103822603	JP 5274775
CN 1278095	JP 5632398
CN 1307406	JP 5658863
EP 0974208	JP 5905189
EP 1086352	JP 6010045
EP 1261845	JP 6010046
EP 1368615	JP 6058109
EP 1440286	JP 6058110
EP 1477767	RU 2499226
EP 1477768	TW I424164
EP 1503524	TW I458937
EP 1505362	TW I458938
EP 1709498	US 6683780
EP 1877732	US 6810597
EP 1967826	US 6839563
EP 2016370	US 6909983
EP 2102589	US 7055367
EP 2115387	US 7146741
EP 2267563	US 7441707
EP 2406584	US 7866056
EP 2447665	US 7885777
EP 2479530	US 7886453
EP 2479531	US 7900367
EP 2665987	US 7970488
EP 2665988	US 8890546
IN 2007/125306	US 9454145
IN 8231/DELNP/2007	US 9471054
IN 6866/DELNP/2011	
IN 6295/DELNP/2013	
IN 6308/DELNP/2013	

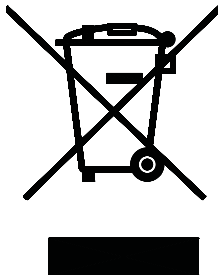
OSP60 EC declaration of conformity



Renishaw plc declares that the OSP60 complies with the applicable standards and regulations.

Contact Renishaw plc or visit www.renishaw.com/sprint for the full EC declaration of conformity.

WEEE directive



The use of this symbol on Renishaw products and/or accompanying documentation indicates that the product should not be mixed with general household waste upon disposal. It is the responsibility of the end user to dispose of this product at a designated collection point for waste electrical and electronic equipment (WEEE) to enable reuse or recycling. Correct disposal of this product will help to save valuable resources and prevent potential negative effects on the environment. For more information, please contact your local waste disposal service or Renishaw distributor.

FCC Information to user (USA only)

47 CFR Section 15.19

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, and
2. This device must accept any interference received, including interference that may cause undesired operation.

47 CFR Section 15.21

The user is cautioned that any changes or modifications not expressly approved by Renishaw plc or authorised representative could void the user's authority to operate the equipment.

47 CFR Section 15.105

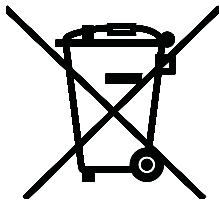
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Safety

Information to the user

In all applications involving the use of machine tools or CMMs, eye protection is recommended.

The OSP60 is supplied with three CR123 3 V lithium manganese dioxide non-rechargeable batteries (approved to BS EN 62133:2013 [IEC 62133:2012]). Once the charge in these batteries is depleted, do not attempt to recharge them.



The use of this symbol on the batteries, packaging or accompanying documents indicates that used batteries should not be mixed with general household waste. Please dispose of the used batteries at a designated collection point. This will prevent potential negative effects on the environment and human health which could otherwise arise from inappropriate waste handling. Please contact your local authority or waste disposal service concerning the separate collection and disposal of batteries. All lithium and rechargeable batteries must be fully discharged or protected from short circuiting prior to disposal.

Please ensure replacement batteries are of the correct type and are fitted in accordance with the instructions in this manual (see Section 4, "Maintenance"), and as indicated on the product. For specific battery operating, safety and disposal guidelines, please refer to the battery manufacturer's literature.

- Do not attempt to recharge the batteries.
- Please dispose of waste batteries in accordance with your local environmental and safety laws.
- Replace the batteries only with the specified type.
- Ensure that all batteries are inserted with the correct polarity.
- Do not store batteries in direct sunlight.

- Do not heat or dispose of batteries in a fire.
- Do not short-circuit or force discharge the batteries.
- Do not disassemble, pierce, deform or apply excessive pressure to the batteries.
- Do not swallow the batteries.
- Keep the batteries out of the reach of children.
- Do not get batteries wet.
- If a battery is damaged, exercise caution when handling it.

Please ensure that you comply with international and national battery transport regulations when transporting batteries or the products.

Lithium batteries are classified as dangerous goods and strict controls apply to their shipment by air. To reduce the risk of shipment delays, if you need to return the products to Renishaw for any reason, do not return any batteries.

The OSP60 has a glass window. Handle with care if broken to avoid injury.

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.

OSP60 is ranked Risk Group: Exempt (safe by design).

The product was evaluated and classified using the following standard:

BS EN 62471:2008 (IEC 62471:2006)	The photobiological safety of lamps and lamp systems.
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Renishaw recommends that you do not stare at or look directly into any LED device, irrespective of its risk classification.

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OSP60 basics

Introduction

The OSP60 SPRINT™ probe is part of the SPRINT high-speed scanning system for CNC machine tools, an innovative high-speed analogue scanning system that offers a new concept in part measurement on machine tools.

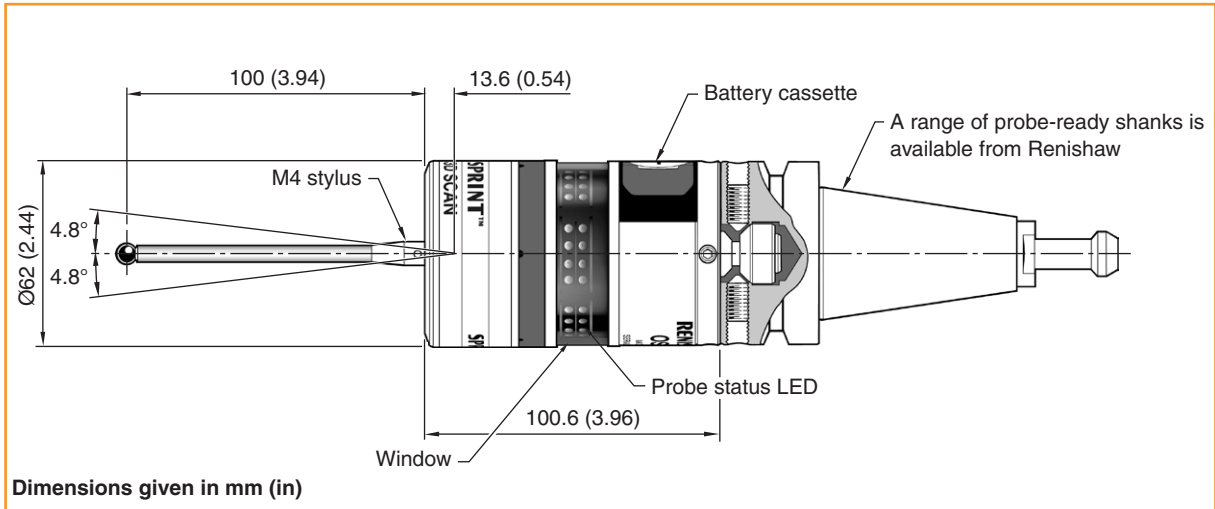
Capable of scanning at speeds of up to 15 m/min (49 ft/min), the SPRINT system measures part surfaces with a high degree of accuracy.

Operating as a 3D analogue scanning probe, the OSP60 is specifically designed to communicate with a machine's CNC controller via the OMM-S SPRINT system receiver and purpose-built OSI-S SPRINT system interface. Two-way communication between the OSP60 and the OMM-S is achieved via robust, high-speed infrared data links.

Unlike conventional machine tool probes that measure individual points from a surface and extrapolate the surface from these points, the OSP60 continually scans the surface with a stylus tip and takes continuous measurement readings at up to 1000 points per second as it is moved across the surface by the machine tool. This high density of data, which results in a high accuracy, full definition of the part's size, position and shape, provides a greater understanding of the part's fitness for purpose and a fast and accurate way to capture form and profile data from both prismatic and complex 3D components.

The OSP60 probe can be used to scan known surfaces very quickly. It can also be used to find surfaces during initial part set-up, using discrete point measurements in a similar way to traditional touch-trigger probing. As a result, SPRINT scanning technology opens up new process control methods not previously possible with traditional measurement methods.

OSP60 dimensions



Stylus overtravel limits			
Stylus length	$\pm X/\pm Y$	+Z	-Z
75 (2.95)	7 (0.28)	6 (0.24)	2.2 (0.09)
100 (3.94)	9 (0.35)	6 (0.24)	2.2 (0.09)
150 (5.91)	13.5 (0.53)	6 (0.24)	2.2 (0.09)

OSP60 specification

System principal application	High-speed scanning system for on-machine process control.	
OSP60 (probe)	Analogue scanning probe for machine tools, capable of both 3D scanning and 3D discrete point measurements.	
Transmission type	Infrared optical transmission: upto 1000 3D points per second.	
Probe transmission range	360°. Up to 4.5 m (14.7 ft) with one receiver, or up to 9 m (29.5 ft) with two receivers.	
Probe turn-on time	Less than 0.5 seconds	
Probe weight (without shank)	With batteries	1080 g (38.1 oz)
	Without batteries	1029 g (36.3 oz)
Recommended battery type	3 × CR123 3 V lithium manganese dioxide	
Battery life typical at 20 °C	See “Typical battery life” table on page 2.4.	
Scanning measurement range (see note 1)	±X, ±Y, ±Z 0.50 mm (0.020 in)	
Sensor type	Full 3D (simultaneous XYZ data output)	
Sense directions	Omnidirectional ±X, ±Y, ±Z.	
Sensor resolution (µm/digit) (see note 3)	XY 0.025 µm (0.9843 µin); Z 0.004 µm (0.1575 µin)	
Maximum scanning speed	Up to rapid (G0) feedrate dependent on machine tool performance and application.	
Stylus length range	75 mm to 150 mm (2.95 in to 5.90 in) recommended.	
Stylus ball diameter range	2 mm to 8 mm (0.078 in to 0.31 in) typical.	
Stylus type	Straight styli only. SPRINT styli recommended. For further information, see the information leaflet <i>Styli recommendations for OSP60 SPRINT™ scanning probes</i> (Renishaw part no H-5465-8102).	
Stylus force	Spring rate (see note 2)	Measuring force (see notes 2 and 3)
XY (typical)	0.8 N/mm (4.57 lb/in)	0.1 N 10 gf (0.4 ozf)
Z (typical)	1.5 N/mm (8.57 lb/in)	0.2 N 20 gf (0.7 ozf)
Environment	IP rating	IPX8 BS EN 60529:1992+A2:2013 (IEC 60529:1989+A1:1999+A2:2013).
	Storage temperature	−10 °C to +70 °C (+14 °F to +158 °F)
	Operating temperature	+5 °C to +55 °C (+41 °F to +131 °F)

Note 1: Maximum allowed distance between the nominal scan line and the actual scan line. Full 3D performance on a vertical machining centre with a 75 mm stylus. In some applications, this range can be extended. Contact your local Renishaw representative for more information.

Note 2: Typical for a 100 mm stylus.

Note 3: Force at which the status signal changes for touch trigger. Assumes a trigger threshold of 0.125 mm (0.0049 in).

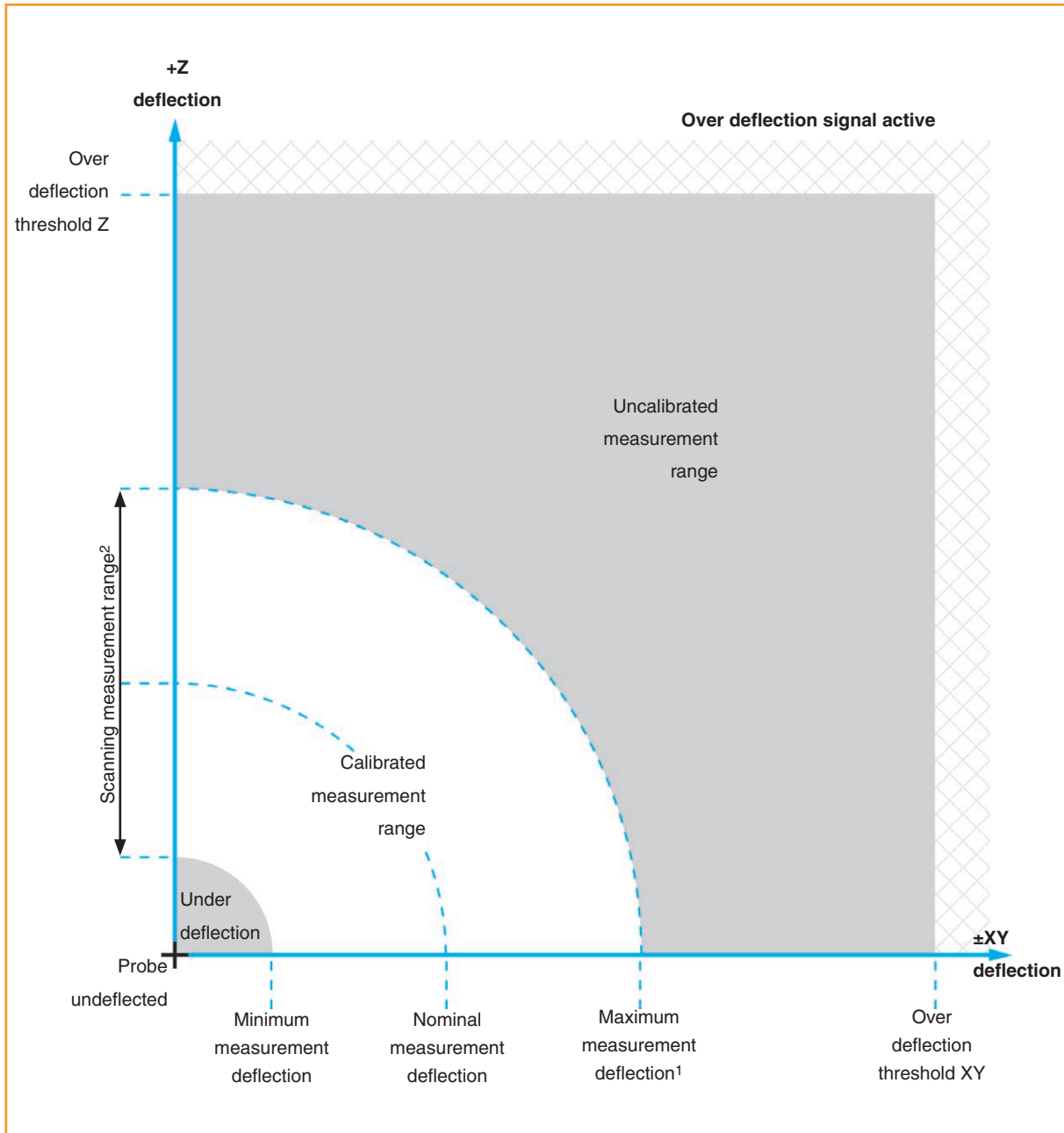
Typical battery life

Operating mode	Battery Life (Figures quoted were achieved using Duracell Ultra DL 3 V lithium manganese dioxide batteries)
	Scanning probe
Operating life: full optical power at 4.5 m (14.76 ft) range and continuous operation.	16 hours
Operating life: 1/8 optical power at 1 m (3.28 ft) range and continuous operation.	31 hours
Operating life: full optical power at 4.5 m (14.76 ft) range with a 5% duty cycle.	320 hours ¹
Operating life: 1/8 optical power at 1 m (3.28 ft) range with a 5% duty cycle.	620 hours ¹
Standby life.	121 days

¹ Calculated value.

Rechargeable lithium-ion batteries may be used as long as they support a 125 mA continuous current drain and meet the dimensional requirements of BS EN 60086-2:2016 (IEC 60086-2:2016). However, if rechargeable batteries are used, the customer will need to establish battery life data based on their own usage.

OSP60 calibrated measurement range



¹When deflected normal to the surface

²As measured by ISO 230-10 scanning 3D performance test

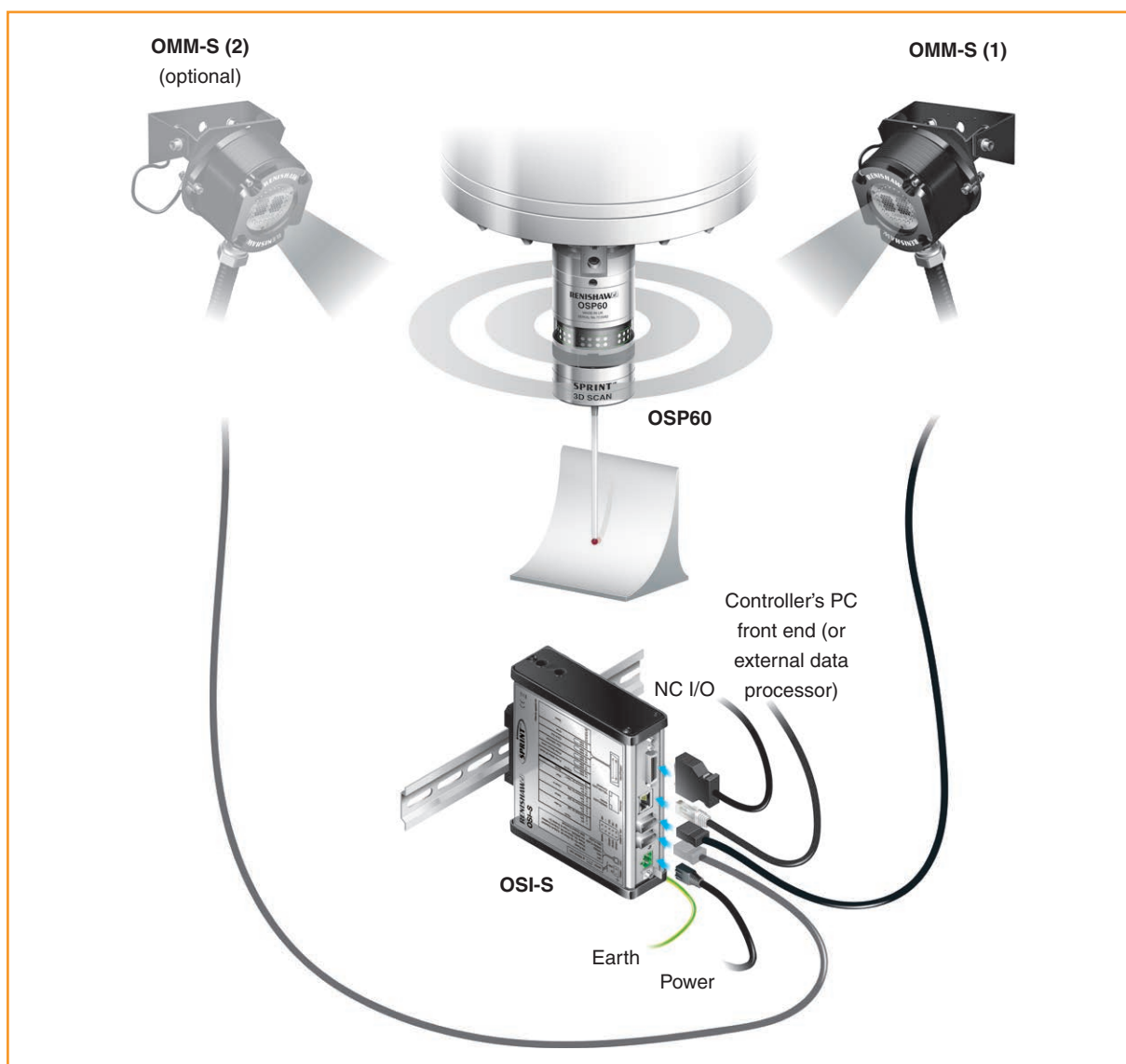
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System installation

Installing the OSP60 with an OMM-S receiver

Typical installation

CAUTION: Due to the sophisticated nature of its optical transmission protocol, the OSP60 is only compatible with the OMM-S receiver. Do not use the OSP60 with any other Renishaw receiver.



IMPORTANT: Ensure OMM-S body is earthed to machine.

The OSP60 is a high-speed analogue scanning probe designed to be robust enough to withstand conditions in the machine tool environment. It has an analogue sensor with 0.025 μm (0.9843 μin) resolution in the XY dimension and 0.004 μm (0.1575 μin) in the Z dimension. The OSP60 is powered by three CR123 3 V batteries and has an optical range of 4.5 m (14.7 ft).

Unlike conventional Renishaw probes that transmit trigger data only, the OSP60 probe transmits probe data including X, Y, Z co-ordinates, internal probe temperature, low battery indication, overtravel status and signal quality.

The OMM-S is designed to be mounted within the machining environment in line-of-sight of the OSP60. The OMM-S has a range of 4.5 m (14.7 ft), which can be extended by connecting a second OMM-S receiver to the OSI-S interface.

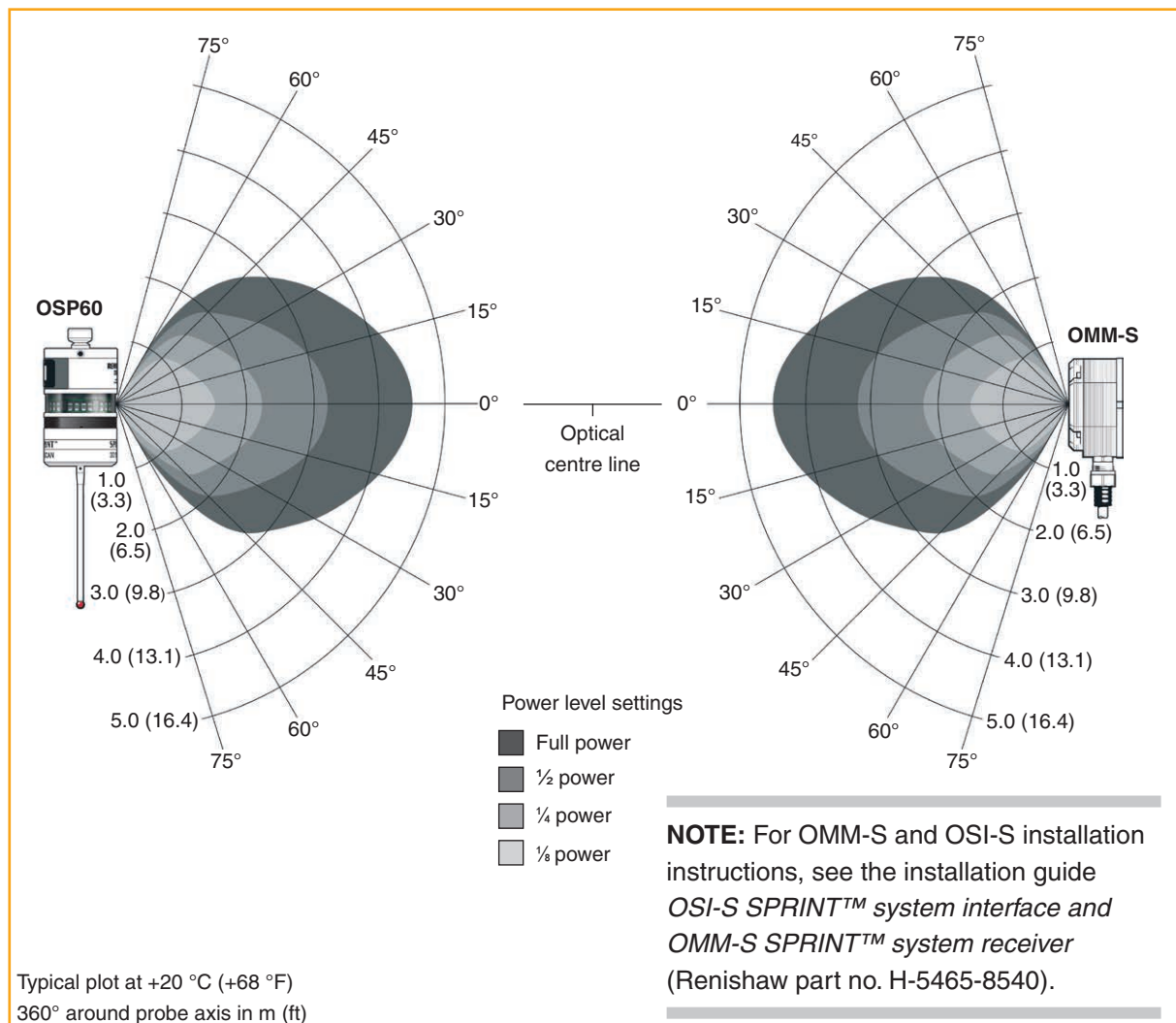
Transmission performance envelope

The SPRINT™ system performance envelope and range is shown below.

The system components should be positioned so that the optimum range can be achieved over the full travel of the machine's axes, taking into account likely part positions on a moving machine table. The system uses optical infrared transmission and requires line-of-sight.

The power level of the OMM-S receiver is set by default to full power, however this can be reduced if problems are encountered with interference from systems on other machines. It is recommended that the optical power of the OSP60 probe remains at the default, automatic power, setting.

Optical power transmission levels for the OSP60 and OMM-S are set within the scanning software.

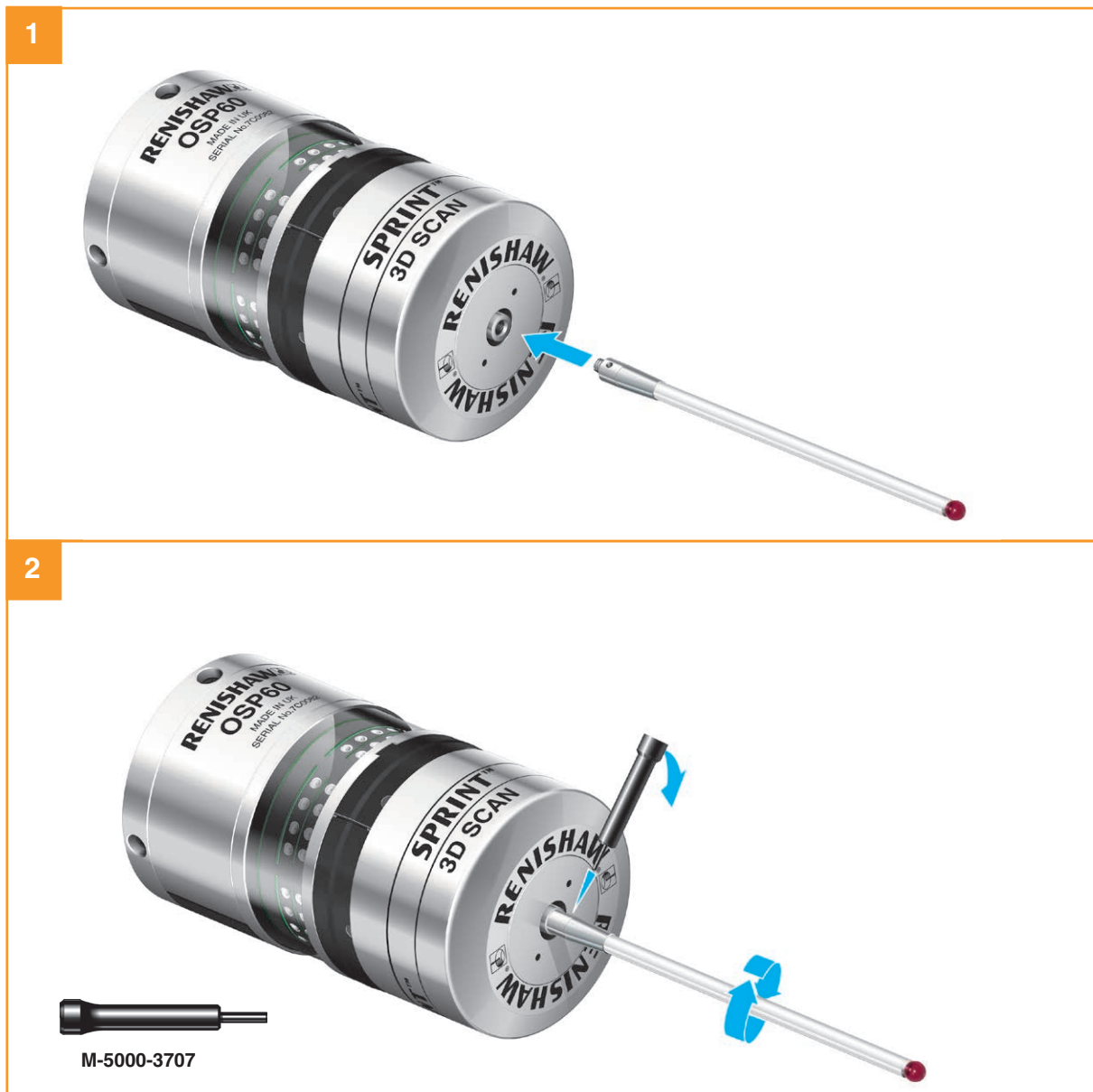


Preparing the OSP60 for use

CAUTION: The OSP60 has a glass window and uses ceramic styli. Use eye protection as necessary and handle with care if broken to avoid injury.

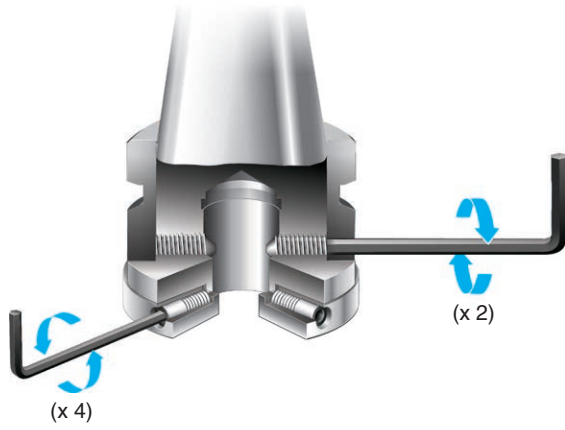
Fitting the stylus

NOTE: The use of a proper torque tool (Renishaw part no. M-5000-3707) is recommended to avoid over tightening and possible damage to the OSP60 probe or stylus. A torque tool is supplied with the OSP60 probe.



Mounting the probe on a shank

1



2



3



Stylus on-centre adjustment

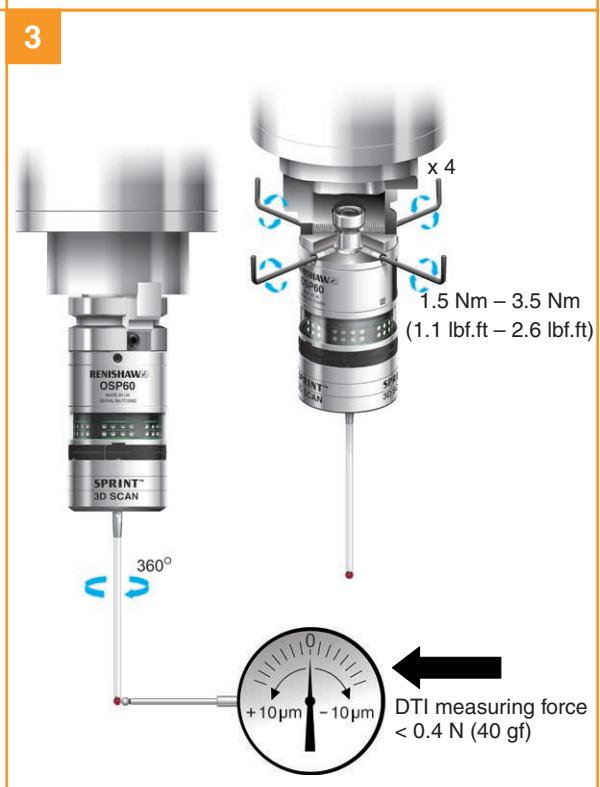
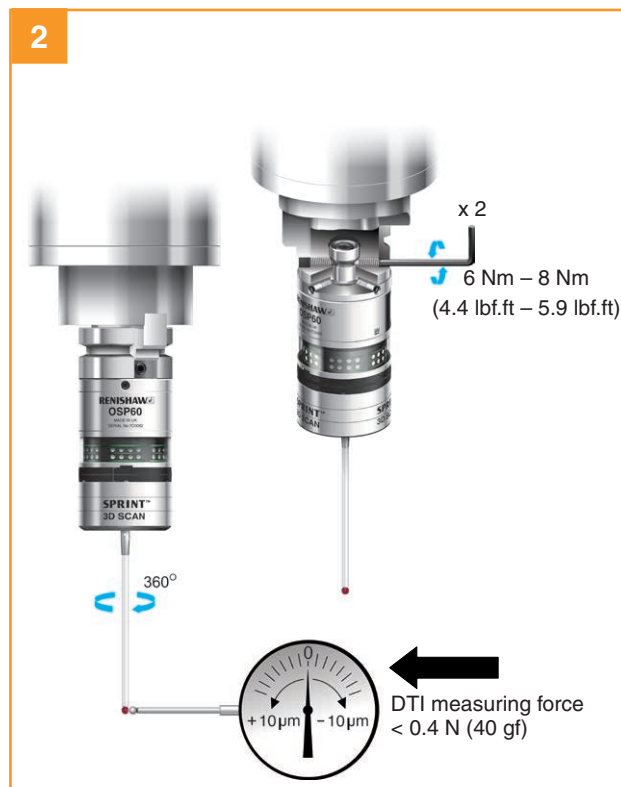
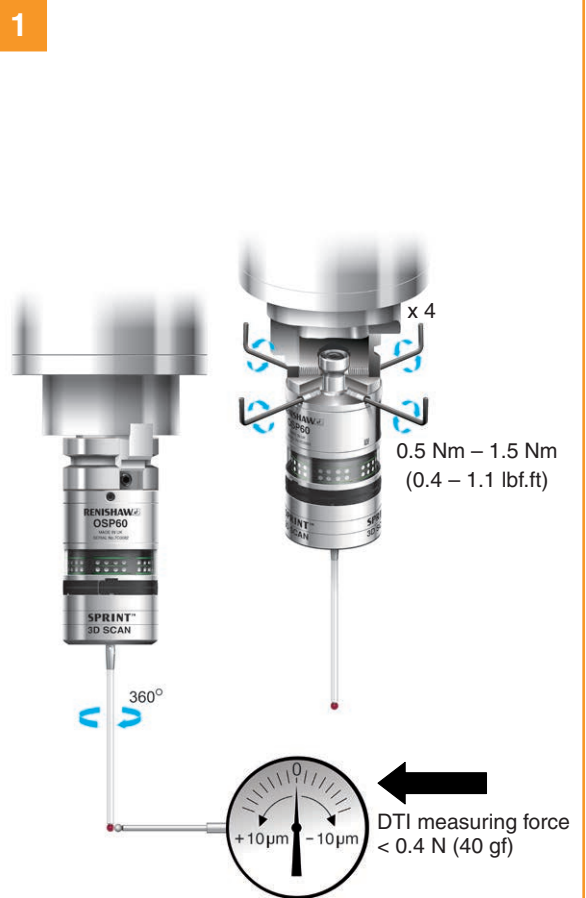
NOTES:

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.

The probe should be “clocked” to within $50\ \mu\text{m}$ ($2000\ \mu\text{in}$). However, it is recommended that the probe is “clocked” to within $20\ \mu\text{m}$. If using an imperial dial test indicator (DTI), “clock” to within approximately $1000\ \mu\text{in}$.

Care must be taken when calibrating the OSP60 probe as the spring force is much lower than a conventional touch-trigger probe. In order to minimise the amount of probe deflection during the “clocking” process, use the lowest DTI measuring force necessary (less than $0.4\ \text{N}$ ($40\ \text{gf}$)) to maintain constant contact between the DTI plunger and the stylus tip.



Installing the batteries

CAUTIONS:

Do not allow coolant or debris to enter the battery compartment.

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

When inserting batteries, check that the contact springs are not damaged and that the battery polarity is correct as failure to do so may be a fire hazard.

Take care to avoid damaging the battery contact springs and the battery cassette gasket.

NOTES:

Maximum battery life is achieved when using high-quality batteries from a reputable manufacturer. It is recommended that the batteries are installed after the probe has been located in the machine spindle.

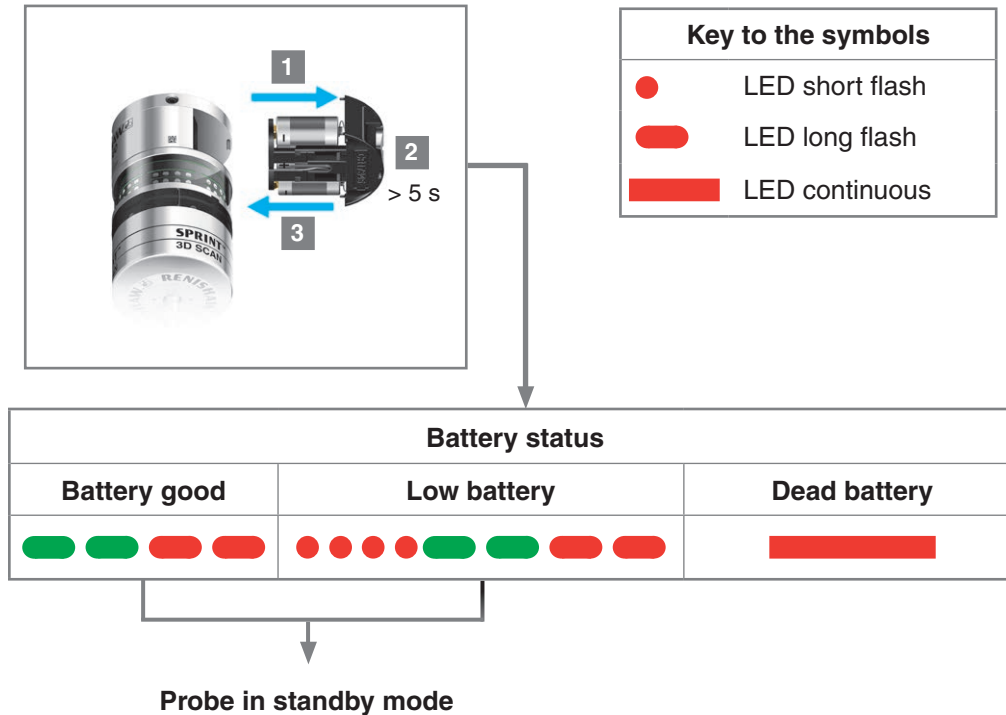
Always ensure that the cassette gasket and mating surfaces are clean and free from dirt before reassembly.

If dead batteries are inadvertently inserted, the LEDs will remain a constant red (or unlit).



Checking the probe for correct battery operation

Following insertion of the batteries, the battery status LEDs should flash green twice and then flash red twice. There is no Trigger Logic™ functionality incorporated into the OSP60 probe and, as a result, all probe configuration must be controlled via the scanning software.



Checking the probe status LED indications with probe in operating mode

Probe status	
Probe seated in operating mode	● ● ● ● ● ●
Probe triggered in operating mode	● ● ● ● ● ●
Probe seated, low battery	● ● ● ● ● ●
Probe triggered, low battery	● ● ● ● ● ●
Dead battery	▬

NOTE:



If your OSP60 scanning probe shows a SPRINT™ logo like the one shown in the graphic opposite, please refer to the installation documentation supplied with that probe.

Calibrating the OSP60

Why calibrate a probe?

The OSP60 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 OSP60 is required to enable the accurate calculation of workpiece surface data and to facilitate correct tool path construction. This ensures that the probe tip is obtaining measurement data from the correct surface of the part. Once calibrated, probing software can be used to compensate for any difference between the position that the stylus touches and the position that is reported to the machine.

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 a new stylus is fitted to the probe;
- when a new shank is fitted to the probe;
- when on-centre adjustment has been carried out;
- 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;
- whenever the OSP60 is moved between machine tools;
- when very tight tolerances need to be achieved¹;
- when there is a need to take into account temperature changes in the machine environment¹;
- if repeatability of relocation of the probe shank is poor. In this case, the probe may need to be recalibrated each time it is selected¹;

¹ Offsets-only calibration (which takes a few seconds) is available to remove tool-change repeatability. This may improve the accuracy by up to about 2 µm in cut-measure-cut processes, or where measurements before and after a tool change are compared.

It is good practice to set the tip of the stylus on-centre, because this reduces the effect of any variation in spindle and tool orientation (see “Stylus on-centre adjustment” page 3.5).

Calibration method

The probe is calibrated on the machine using a sphere of known size. Typically a sphere of Ø25 mm (or Ø1 in) is used, but other sizes can also be used. The calibration routine consists of three parts:

- establishing the probe datum;
- determining the location of the calibration sphere and stylus ball radius;
- scanning the calibration sphere.

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

Cleaning the probe

Wipe the window, battery compartment and plastic breather cover of the probe with a clean cloth to remove machining residue. This should be done on a regular basis to maintain optimum transmission and performance.



CAUTION: The OSP60 has a glass window and uses ceramic styli. Use eye protection as necessary and handle with care if broken to avoid injury.

Cleaning the probe's front and rear diaphragms

CAUTIONS:

Under no circumstances should compressed air be used to clean/dry the OSP60 as this can damage the diaphragms.

Do not attempt to remove the overtravel stop ring.

The OSP60 probe mechanism is protected from coolant and debris by two diaphragms. These provide adequate protection under normal working conditions.

The plastic breather cover next to the optical window must be kept clean, particularly the breather holes leading to the rear diaphragm. These can be cleared by removing any debris with a clean lint-free cloth.

The airway behind the breather holes in the plastic cover should also be cleaned periodically. This is done by flushing the body of the OSP60 under a flow of clean running water (water temperature 40 °C (104 °F) maximum). The following recommendations should be followed:

1. Aim a moderate flow of clean running water at each of the six breather cover cut-outs.
2. Manually shake/spin the probe to ensure the water reaches the rear diaphragm.
3. Continue with this cycle until the water ejected from the breather holes runs clear.

Periodically, the area behind the overtravel stop ring (where the stylus joins the probe) should also be cleaned. This can be achieved by flushing the area under a flow of clean running water (water temperature 40 °C (104 °F) maximum). The following recommendations should be followed:

1. Aim a moderate flow of clean running water at the gap between the stylus and the overtravel stop ring.
2. Manually shake/spin the probe to ensure the water reaches the front diaphragm.
3. Continue with this cycle until the water ejected from the area runs clear.



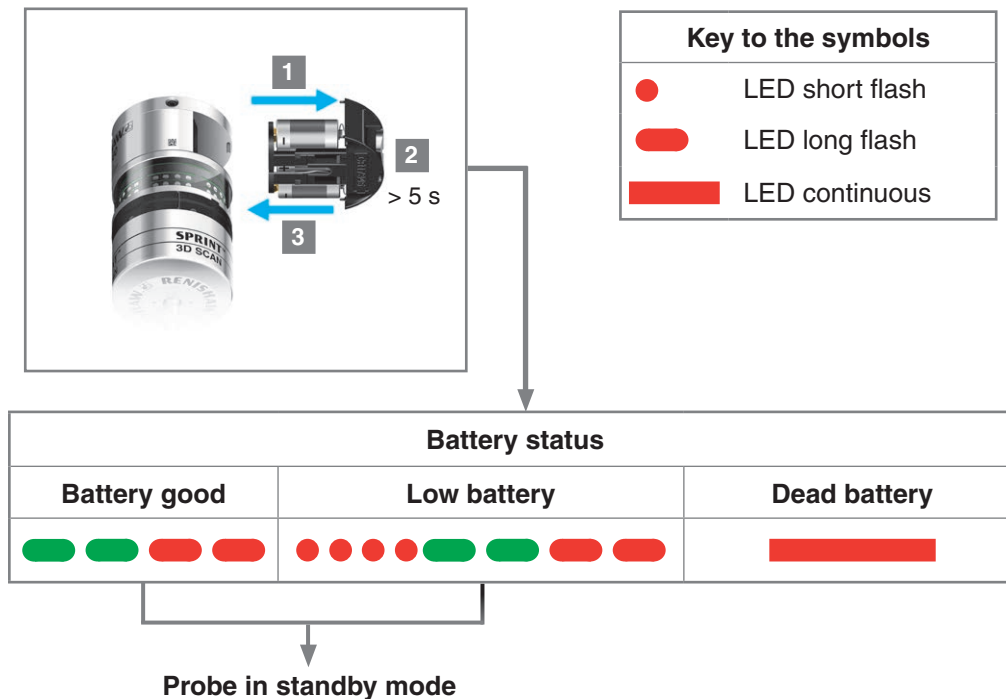
Cleaning the front and rear diaphragm

Checking the battery status

To check the battery status:

1. Remove the battery cassette.
2. Wait for a period of more than 5 seconds.
3. Replace the battery cassette, taking care not to damage the battery cassette gasket.
4. Observe the probe LEDs to determine battery status.

If required, change the batteries. See “Changing the batteries” on page 4.4 for details on changing batteries.



Changing the batteries

1



CAUTIONS:

Do not leave dead batteries in the probe.

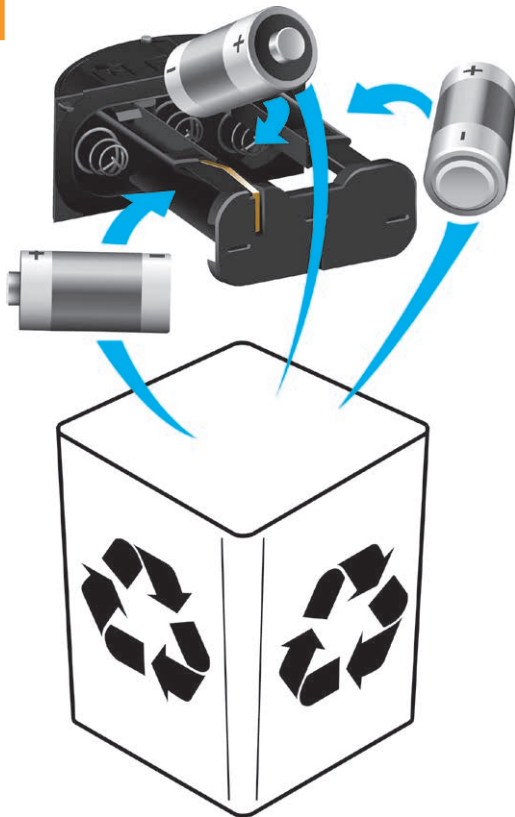
When changing batteries, ensure the probe is clean and dry. Do not allow coolant or debris to enter the battery compartment or seal.

When inserting batteries, check that the contact springs are not damaged and that the battery polarity is correct as failure to do so may be a fire hazard.

Take care to avoid damaging the battery contact springs and the battery cassette gasket.

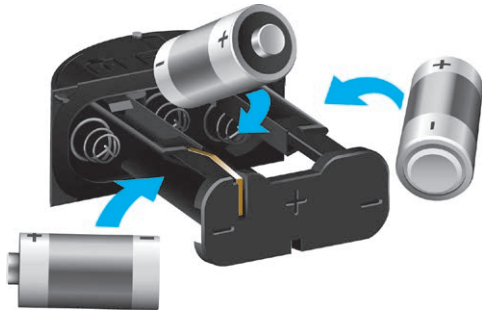
Only use specified batteries.

2



CAUTION: Please dispose of dead batteries in accordance with local regulations. Never dispose of batteries in a fire.

3



Recommended battery types

Lithium manganese dioxide × 3



CR123 3 V or DL123 3 V

NOTES:

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 (or unlit).

4



5



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Fault-finding

NOTE: The following fault-finding information is specific to the OSP60 probe. For further fault-finding information, see the scanning software and the installation guide *OSI-S SPRINT™ system interface and OMM-S SPRINT™ system receiver* (Renishaw part no. H-5465-8540).

Symptom	Cause	Action
OSP60 probe fails to power up (no LEDs illuminated, or fails to indicate battery status).	Dead batteries.	Change batteries (see page 4.4).
	Unsuitable batteries.	Change batteries (see page 4.4).
	Batteries inserted incorrectly.	Check battery insertion (see page 4.4).
OSP60 probe fails to switch on or switches off unexpectedly.	Dead batteries.	Change batteries (see page 4.4).
	Unsuitable batteries.	Change batteries (see page 4.4).
	Batteries inserted incorrectly.	Check battery insertion (see page 4.4).
	OSP60 probe is out of transmission range.	Increase optical power setting in the SPRINT software settings menu or reduce the range between the OSP60 and OMM-S.
	Beam obstructed.	Clean the OSP60 probe and OMM-S window and remove any obstructions (see page 4.1).
	Poor earth connection.	Check earth connection of the OMM-S and OSI-S.

Symptom	Cause	Action
Machine stops unexpectedly during a probing cycle.	Optical link failure/OSP60 probe is out of range.	Check the OSP60 probe and OMM-S and remove obstruction. Clear alarm.
	Dead batteries in OSP60.	Change batteries (see page 4.4) and clear alarm.
	Over deflection.	Check that the part is correctly positioned or change the safety plane height and clear alarm.
	OSP60 probe length offset is missing/incorrect.	Enter the correct probe length and recalibrate the probe. Clear alarm.
Poor OSP60 probe repeatability and/or accuracy.	Debris on part or stylus.	Clean the part and stylus.
	Damaged/distorted stylus.	Replace the stylus and recalibrate the OSP60 probe (see page 3.8).
	Poor tool change repeatability.	Recalibrate the OSP60 probe after each tool change (see page 3.8).
	Loose probe mounting on shank or loose stylus.	Check and tighten as appropriate. Recalibrate the OSP60 probe (see page 3.8).
	Calibration feature has moved.	Correct the position.
	Measurement occurs within the machine's acceleration and deceleration zone.	Increase the lead on/lead off or arc on/arc off radius.
	Probing speed too high or too slow.	Perform simple repeatability trials at various speeds.
	Temperature variation causes machine and workpiece movement.	Minimise temperature changes and recalibrate offsets frequently.

Symptom	Cause	Action
Poor OSP60 probe repeatability and/or accuracy (continued).	Machine tool faulty.	Perform health checks on the machine tool.
	Embedded swarf or debris in or around the front diaphragm.	Visibly inspect the front diaphragm for debris and swarf by manipulating the position of the stylus. Do not remove the overtravel stop ring. If swarf or debris is identified, then flush the area with clean running water as described on page 4.2. If the front diaphragm appears to be damaged, or cannot be cleared of swarf or debris, then the OSP60 probe should be returned to Renishaw.
Reduced range.	Incorrect power setting.	Check power settings. It is recommended that the power level of the OMM-S receiver is set to full power, and the optical power of the OSP60 probe is set to automatic power.
	Poor alignment.	Check orientation of the OMM-S and line-of-sight. Add a second OMM-S if necessary.
	Poor earth connection.	Check earth connection of the OMM-S and OSI-S.

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Parts list

Type	Part number	Description
OSP60 kit	A-5465-2001	OSP60 probe kit, includes tool kit and quick-start guide.
Tool kit	A-4038-0304	Tool kit comprising: styli tool, 2 mm hexagon wrench, 2 × 2.5 mm hexagon wrench, 4 mm hexagon wrench, 2 × M8 ×12 mm long screws.
CR123 3 V battery	P-BT03-0006	Lithium manganese dioxide battery 3 V 1400 mAh.
Battery cassette	A-5465-2304	OSP60 battery cassette.
Breather cover	A-5465-2305	OSP60 breather cover.
Battery cap gasket kit	A-5465-2300	OSP60 battery cap gasket kit comprising: 1 × gasket and 1 × support ring.
Stylus tool	M-5000-3707	Tool for tightening or releasing the stylus.
Publications. These can be downloaded from our website at www.renishaw.com		
OSP60 quick-start guide	H-5465-8500	OSP60 quick-start guide: for the rapid set-up and installation of the OSP60 probe.
OMM-S and OSI-S quick-start guide	H-5465-8520	OMM-S and OSI-S quick-start guide: for the rapid set-up and installation of the OMM-S and OSI-S.
OMM-S and OSI-S installation guide	H-5465-8540	OMM-S and OSI-S SPRINT™ system interface and OMM-S SPRINT™ system receiver installation guide.
Taper shanks data sheet	H-2000-2011	Data sheet: taper shanks for machine tool probes.
Styli recommendations for SPRINT scanning probes information leaflet	H-5465-8102	Information leaflet: recommended styli for use with SPRINT scanning probes.
Styli and accessories	H-1000-3200	Technical specification: styli and accessories – or visit our Web shop at www.renishaw.com/shop .
SPRINT system data sheet	H-5465-8200	Data sheet: SPRINT system.
OSP60 battery cap gasket replacement information leaflet	H-5465-8532	OSP60 battery cap gasket replacement information leaflet

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