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Probe software for machine tools: programs and features

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Contents

Software features

Illustrations in this publication demonstrate typical applications and features. They are not a complete specification for all software packages. Refer to the programming manual supplied with each software package for a complete specification of the software package.

The software packages listed in this document require minimal installation support. If you cannot find the package for your machine and controller combination, contact your local Renishaw office.

Probe software for machining centres

Inspection Plus software for machining centres

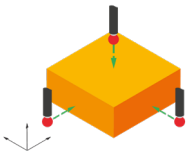
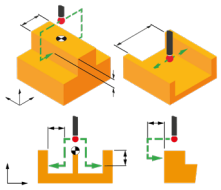
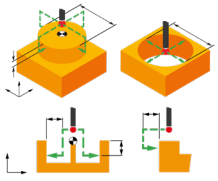
Inspection Plus is a comprehensive macro software package for Renishaw machine tool probes. A wide range of cycles are supported from basic part set-up through to more complex vector and angular measurement cycles.

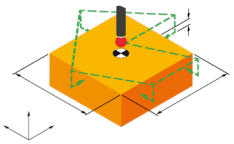
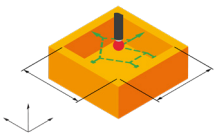
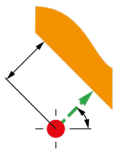
Inspection Plus packages incorporate optional SupaTouch optimisation – calibrating a machine tool, controller and Renishaw probe as a complete system, resulting in improved metrology and reduced cycle times.

Experienced users can create and execute cycles using traditional G-code techniques. New or less experienced users can choose from a range of graphical user interfaces (GUIs), including Set and Inspect (see page 7.2 for more details) or GoProbe, which offers a simplified programming method supported with a self-study training kit and smartphone app (see page 8.1 for more details).

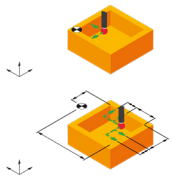
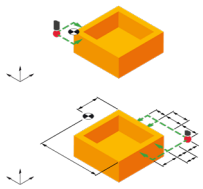
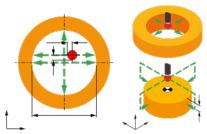
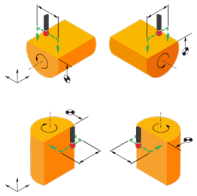
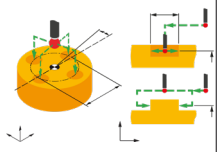
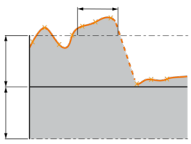
On completion of each cycle, the measured results can be printed via the RS232 port. Alternatively, Reporter can be used to view component measurement data on the machine tool or export this measurement data for further analysis.

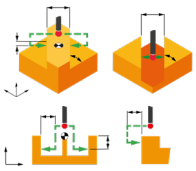
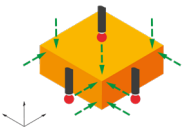
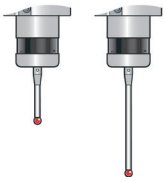
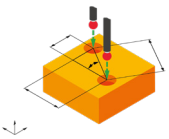
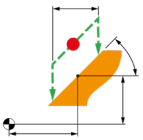
A complementary Inspection Plus for OSP60 software package also exists. This package, used in conjuction with Productivity+™ CNC plug-in or SupaScan, allows users to run existing Inspection Plus touch probe measurement routines using the OSP60 on-machine scanning probe.

Cycle title and description		GoProbe option
XYZ surface measure Used to measure a surface to establish size or position.		✓
Web/pocket measure Used to measure a web or pocket feature using two measuring moves along the XY axis.		✓
Bore/boss measure Used to measure a bore or boss feature using four measuring moves along the XY axis.		✓

Cycle title and description		GoProbe option
5-point rectangle (external) measure Used to establish the centre of a rectangle and its orientation. A true centre can be found even if the feature is not square to the machine axes.		✓
5-point rectangle (internal) measure Used to establish the centre of a rectangle and its orientation. A true centre can be found even if the feature is not square to the machine axes.		✓
Angled surface measure using XYZ inputs Used to measure a surface feature using a 2D vectored move in either XY, XZ, YZ, or a 3D vectored move in XYZ.		

continued ...

Cycle title and description		GoProbe option
Internal corner measure Used to establish the corner position of a feature. A true corner intersection can be found when the corner is not 90°.		✓
External corner measure Used to establish the corner position of a feature. A true corner intersection can be found when the corner is not 90°.		✓
3-point bore or boss measure Used to measure a bore or boss feature using three vectored measuring moves along the XY axis.		✓
4th-axis measure Used to find the angle of a surface between two points. The 4th axis can then be rotated to compensate for the surface error.		✓
Bore/boss on a PCD measure Used to establish the pitch circle diameter between a series of bores or bosses.		
Statistical process control (SPC) cycle for tool offset updates Can be used in conjunction with measuring cycles to control the updating of tool offsets. An update is based on the average value of a sample of measurements.		
Probe start Used to switch the probe on and open a print port in readiness for printing results in subsequent measuring cycles.		

Cycle title and description		GoProbe option
Angled web/pocket measure Used to measure a web or pocket feature using two vectored measuring moves along the XY axis.		
Stock allowance Used to measure an X, Y or Z surface at defined positions to establish the maximum and minimum stock condition of the surface.		
Multi-stylus calibration Several stylus ball configurations can be calibrated and stored.		
Feature-to-feature measure A no movement cycle that is used after two measuring cycles to determine feature-to-feature data.		
Angled XY surface (angle find) measure Used to measure an X-axis or Y-axis surface at two positions to establish the angular position of the surface.		
Protected position move Used to protect the probe against damage. It can also be used to detect misloaded components.		
Probe stop Used to switch the probe off and close a print port.		

Inspection Plus software for machining centres

Machine (Controller)	Part number	GoProbe app support [1]	Set and Inspect support [2]	Reporter support	SupaTouch optimisation
Brother (32A (A000) – post June 2002)	A-4012-0908				
Brother (32B (B00), 32C (C00), 32D (D00))	A-4012-1028 [3]	✓			✓
Brother 'L' shaped stylus	A-4012-2113				
DMG MORI (Fanuc/Meldas)	A-4012-0936 [3]	✓			✓
Fagor (8060, 8065, 8070)	A-4016-0071 [3]	✓			
Fagor (8055)	A-4016-0067	✓			
Fanuc Macro B (0M, 10-15M, 15*i* M, 16-21M/*i* M, 30-32*i* M)	A-4012-0516 [3]	✓	✓	✓	✓
Fanuc Macro B 'L' shaped stylus (0M, 10-15M, 15 M, 16-21M/*i* M, 30-32*i* M)	A-4012-1551				
Haas	A-4012-0880 [3]				
Hitachi (Fanuc special)	A-4012-0673 [3]				
Hitachi Seicos (Σ10, Σ16, Σ18, MIII (M3), Lambda)	A-4012-0749 [3]				
Hurco (WinMax)	A-4012-1126 [3]				✓
Makino (All variants)	A-4012-1611 [3]	✓			✓
Mazak (M32, M Plus and Fusion 640M) [4]	A-4013-0023 [3]				
Mazak HMC, VMC, Variaxis (Smooth, Matrix, Matrix Nexus, Smart) [4]	A-4013-0112 [3]	✓	✓	✓	
Mazak Versatech (Smooth, Matrix M) [4]	A-4013-0232 [3]				
Mazak VTC800 (Smooth, Matrix, Matrix Nexus) [4]	A-4013-0205 [3]	✓	✓	✓	
Mitsubishi Meldas (M3, M310, M320, M330, M335 series, M50, M500 series M64, Magic 64, M60, M600, M70, M700, M80, M800 series)	A-4012-0516 [3]	✓	✓	✓	✓
NUM (750, 760, 1020-1060) [5]	A-4012-0712 [3]				
Okuma (OSP E100, P100, P200, P300, P500, U100)	A-4016-1035 [3]	✓	✓ [6]	✓ [6]	✓
Okuma MILLAC VH/MCR (OSP P200, P300, P500)	A-4016-1087 [3]				
Siemens (802D, 808D)	A-4014-0336				
Siemens (810D, 828D, 840D, SINUMERIK ONE) [7] [8]	A-4014-0356 [3]	✓		✓	✓
Siemens 'L' shaped stylus (810D, 828D, 840D, SINUMERIK ONE) [7]	A-4014-0695				
Syntec	A-4012-1239 [3]				
TOSNUC (888, 999, PX100, PX200)	A-4012-0949 [3]	✓			
Yasnac (MX3, J50, I80, J100, J300)	A-4014-0070 [3]				

Quote part number when ordering.

Notes:

1 See page 8.1 for minimum macro software requirements.

2 See page 7.2 for minimum macro software requirements.

3 Print option available – function dependent on controller (not available with the GoProbe option).

4 EIA/ISO and Mazatrol compatible.

5 Currently metric mode only.

6 Set and Inspect and Reporter support Okuma OSP P300 and P500 controllers only. See page 7.2 for minimum version requirements.

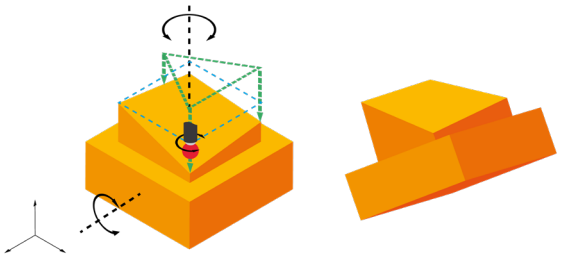
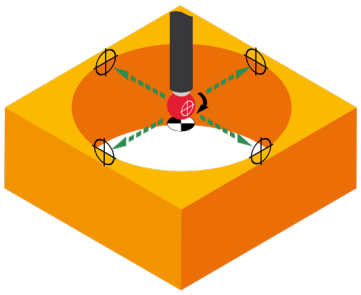
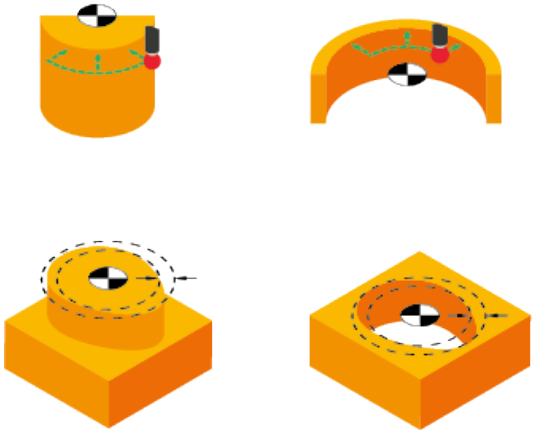
7 The software is not supported on Siemens powerline controllers below version 5.0. Contact Renishaw support for earlier versions.

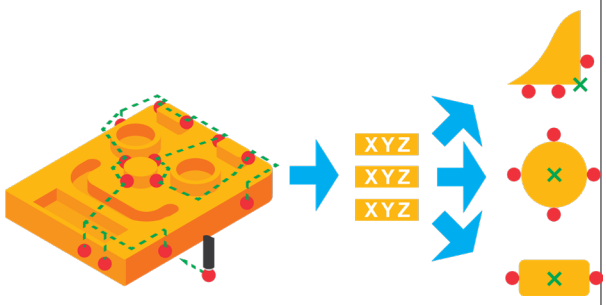
8 With optional HMI

Advanced cycles “add-on” package for Inspection Plus

Advanced cycles enhance the existing Inspection Plus package to offer probing cycles that are aimed at more experienced users, specialised applications or where a bespoke probing cycle is required. The advanced cycles offer improved metrology, flexibility, and speed.

NOTE: These cycles are to be used alongside the host Inspection Plus software package. The GoProbe option is not available for advanced cycles.

Probing cycle, benefit, and description	
Levelling cycle **Benefit:** For efficient 5-axis machining the part needs to be level in all axes. This cycle simplifies the process of part levelling on a 5-axis machine, resulting in reduced set-up time, improved cutting accuracy and less scrap. **Description:** Used to align the top face of a component perpendicular to the spindle axis. Designed for a 5-axis machine, table/table construction and utilises the Fanuc software function G68.2 P2 or CYCLE800 Additive Projection Angle for Siemens. The probe measures three positions in Z and automatically levels the component. It is possible to update the selected work offset with the rotary axis positions. **NOTE:** G68.2 is a Fanuc option, CYCLE800 is standard on Siemens controllers.	
Probe orientation cycle **Benefit:** Designed for simplified work piece set-up. The spindle orientates the probe so that each measurement touch uses the same trigger point on the stylus, therefore if the probe is only used for setting XY work offsets, there is no need to calibrate the probe in XY. **Description:** Sets a WCS to the centre of a bore/boss, web/pocket. **NOTE:** Programmable spindle orientation is a Fanuc option; it is standard on Siemens controllers (SPOS).	
Multi-point circle-arc cycle **Benefit:** Measures the form (circularity) of a bore or boss. The cycle can also measure a partial arc, returning size and position. The probe does not return to the feature centre between moves, reducing cycle time and useful on large arc measurement, where axis travel is limited. **Description:** Measures a circle/arc using a minimum of 3 and a maximum of 16 vectoring measuring moves.	

Probing cycle, benefit, and description	
Construction cycles **Benefit:** These cycles can be used in applications where the tradition "canned" cycles are too rigid. They are designed for users who want to build their own measurement routines, control the path between measuring points and the order in which measured points are taken. With this level of flexibility, cycle time can be reduced to the absolute minimum. **Description:** The user moves the probe adjacent to the surface, measures a point, measured values are stacked for later calculation, the above process is repeated until all points are captured. Once all measured results are stacked, features can be constructed using the measured points. Size and positional information can then calculated and used to update WCS or tool offsets. **Examples:** **Two-point construction cycle** Used for traditional XY web/ pocket or angled web/pocket applications. Finds the centre, distance and angle between two points – P1 and P2. **Two-line intersection cycle** Finds an intersection point from four points in the XY plane (two points on each line). **Construction circle** Fits a circle (or arc) to a set of points which do not have to be equi-spaced.	

Advanced cycles software

Machine (Controller)	Part number	Minimum version of Inspection Plus required
DMG MORI (Fanuc/Meldas)	A-4012-2130	A-4012-0516-0M
Fanuc Macro B/Mitsubishi Meldas	A-4012-2106	A-4012-0516-0M
Mazak (Smooth/Matrix)	A-4013-2003	A-4013-0112-0T
Okuma (OSP U10/U100/E100/P200/P300/P500)	A-4016-1035	A-4016-1035-AD
Siemens	A-4014-0823	A-4014-0356-0H

Probe calibration cycles for ACS-1

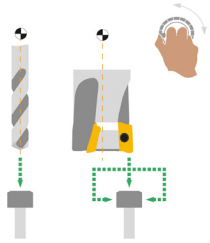
Machine (Controller)	Part number	Minimum version of Inspection Plus required
Brother (32B (B00), 32C (C00), 32D (D00))	A-4012-2136	A-4012-1028
Fanuc Macro B/Mitsubishi Meldas	A-4012-2125	A-4012-0516-AB
DMG MORI (Fanuc)	A-4012-2143	A-4012-0936-0X
Haas	A-4012-2141	A-4012-0880 0D or Haas factory fitted Renishaw/WIPS Inspection Plus software
Heidenhain (i530, 620/640)	A-4014-0839	N/A
Makino	A-4012-2125	A-4012-1611-0F
Mazak Integrex, Vortex (Smooth, Matrix)	A-4013-0604	A-4013-0106-AH A-4013-0404-0B
Mazak (Smooth/Matrix)	A-4013-0602	A-4013-0112-0T
Mazak (using Mazatrol cycles)		N/A
Okuma	A-4016-1135	A-4016-1035-0W
Siemens	A-4014-0837	A-4014-0356-0P
Siemens (using Siemens cycles)	A-4014-0851	N/A
ACS-1 macro s/w kit bundle includes all of the above kits (except Heidenhain and Siemens using Siemens cycles)	A-6794-8991	See individual kits

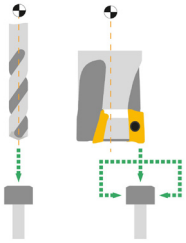
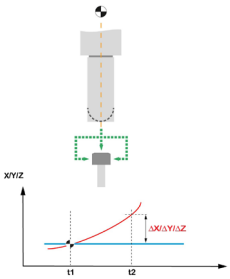
Contact tool setting software for machining centres

Renishaw's contact tool setting software for machining centres can be easily set up to suit a machine tool's configuration. The software is suited to the majority of applications, especially when used with Renishaw's industry-standard TS27R, RTS and OTS probes.

Experienced users can create and execute cycles using traditional G-code techniques. Renishaw's range of user-friendly GUIs (including Set and Inspect) supports new and less experienced users (see page 7.1 for details).

The contact tool setting software also contains a GoProbe option to offer a choice between the traditional programming method and the GoProbe programming method.

Cycle title and description		GoProbe option
Manual measurement Used to measure the length, or length and radius, of a tool. The tool should be manually positioned 10 mm from the stylus before running the cycle, and there should be no tool offset active.		✓
Broken tool detection Used to check the length of a rotating tool for a broken tool condition. The cycle also checks for a 'long tool' condition in case the tool has pulled out during machining.		✓

Cycle title and description		GoProbe option
Automatic measurement This cycle takes a measurement on the tool setting stylus to measure the effective cutting length of either a rotating or a non-rotating tool. The tool must be called into the spindle, then the cycle will automatically move the tool to the clearance position.		✓
Thermal compensation Used to check thermal drift on the machine, this cycle has two functions: 1. To set base data. This measures the X, Y and Z faces of the stylus and saves the positions in variables. The locations are set on the input line. 2. To measure and compare. This measures the X, Y and Z faces of the stylus and compares the results to the base data, revealing any thermal drift. The differences in X, Y and Z will be output into variables. If they are out of tolerance, an alarm will be raised.		✓

Contact tool setting software for machining centres

Machine (Controller)	Part number	GoProbe app support [1]	Set and Inspect support [2]	Reporter support
Brother (32A (A00) – post June 2002, 32B (B00), 32C (C00), 32D (D00))	A-4012-1007 [3]	✓		
DMG MORI (Fanuc/Meldas)	A-4012-1555 [3]	✓		
Fadal (32MP, CNC88, CNC88HS)	A-4016-0043 [3]			
Fagor (8060, 8065, 8070)	A-4016-0078 [3]			
Fanuc Macro A (0M MATE, 0MA, 0MB, 0MC)	A-4012-0645 [3]			
Fanuc Macro B (0M, 6M, 16-21M/*i*M, 10-15M, 15*i*M, 30-32*i*M)	A-4012-0584 [3]	✓	✓	✓
Haas	A-4012-0886 [3]			
Heidenhain (iTNC 530 v 340 494-04 onwards)	A-4014-0711 [3]			
Hitachi Seicos	A-4012-0817 [3]			
Hurco (WinMax)	A-4012-1145 [3]	✓		✓
Makino (All variants)	A-4012-1580 [3]	✓		
Mazak (M32, M Plus, Fusion 640M) [4] **Mazak** (Smooth, Matrix, Matrix Nexus, Smart) [4] **Mazak** (CV5-500)	A-4013-0036 [3] A-4013-0133 [3] A-4013-0429	 ✓ ✓	 ✓ ✓	 ✓
Mitsubishi Meldas (M3, M310, M320, M335, M500, M600, M700, M800 series)	A-4012-0584 [3]	✓	✓	✓
NUM (750, 760, 1020, 1060)	A-4012-0665 [3]			
Okuma (OSP E100, P100, P200, P300, P500, U100)	A-4016-1039 [3]	✓	✓	✓
Selca (3000/4000 series)	A-4014-0094 [3]			
Siemens (810, 820, 840, 850, 880) **Siemens** (840C) **Siemens** (802D, 808D) **Siemens** (810D, 828D, 840D, SINUMERIK ONE) [5] [6]	A-4014-0064 [3] A-4014-0064 [3] A-4014-0310 [3] A-4014-0396 [3]	 ✓	 	
Yasnac (Yasnac MX3, J50, I80, J100, J300 (Matsuura M80))	A-4014-0018			

Quote part number when ordering.

Notes:

[1] See page 8.1 for minimum macro software requirements.

[2] See page 7.2 for minimum macro software requirements.

[3] Includes rotating tool setting.

[4] EIA/ISO and Mazatrol compatible.

[5] The software is not supported on Siemens powerline controllers below version 5.0. Contact Renishaw support for earlier versions.

[6] With optional HMI.

Length tool setting (LTS) software for machining centres

Machine (Controller)	Part number
Brother, Fanuc, Haas, Hurco, Mazak, Mitsubishi Meldas, Siemens, Syntec	A-5475-8700

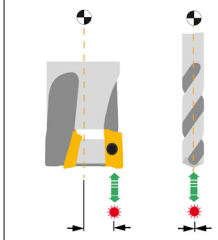
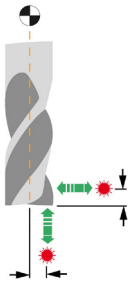
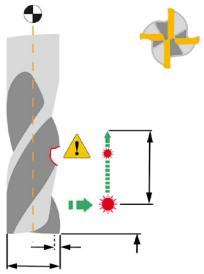
Non-contact tool setting software for machining centres

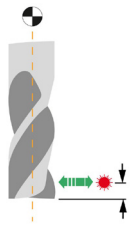
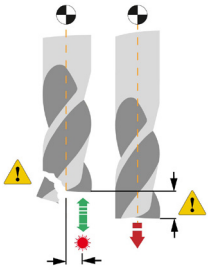
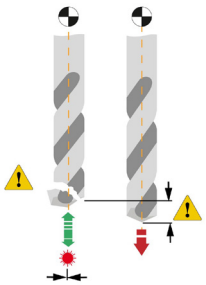
The non-contact tool setter (NCTS) is designed to help machine tool operators to set tools and return high-speed/high-precision measurement of cutting tools, and is preferred for applications where delicate tools are used and/or where a tool setter must not obstruct a machine's working envelope.

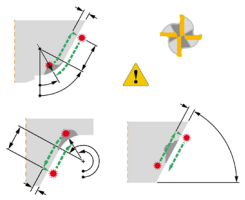
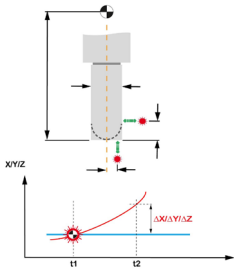
Experienced users can create and execute cycles using traditional G-code techniques. Renishaw's range of user-friendly GUIs (including Set and Inspect) and the GoProbe smartphone app support new and less experienced users (see page 7.2 and page 8.1 for details).

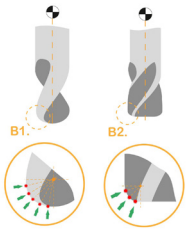
Two measurement methods are available with the non-contact tool setting system: Tool Set Mode 1 (TSM1), where the tool is measured as it enters the beam (light-to-dark transition), and Tool Set Mode 2 (TSM2), where the tool is measured as it enters and exits the beam (dark-to-light transition). All packages support TSM1; newer packages support both TSM1 and TSM2.

Where both modes are supported, the decision to use TSM1 or TSM2 is typically based on M-code availability and measurement conditions (for example, in wet conditions, TSM2 is recommended).

Cycle title and description	
Tool length setting Used to measure the effective length of a cutting tool, this cycle is suitable for on-centre setting of tools such as drills and ball-end mills, and for off-centre setting of tools such as face mills and end mills.	
Tool length and radius setting Used to measure the effective length and radius/diameter of a tool, this cycle is particularly suitable for tools such as face mills, end mills, slot cutters, disk mill cutters, dovetail cutters and boring tools.	
Cutting edge checking Used to check for missing or damaged edges, or the distance between minimum and maximum edges. The Latch mode feature on the NCi-6 must be enabled.	

Cycle title and description	
Tool radius and diameter setting Used to measure the effective radius or diameter of a tool, this cycle allows the radius and diameter to be measured from the positive side of the beam, the negative side of the beam, or both sides of the beam.	
Broken tool detection – plunge checking Used to check for broken cutting tools, this cycle uses a plunge check to move the tool in and out of the laser beam in the axis used for length setting. The cycle can also check for a 'long tool' condition in case the tool has pulled out during machining.	
Broken tool detection for solid tools This cycle differs from the 'Broken tool detection – plunge checking' cycle, in that it uses the Tool Break mode feature on the NCi-6. The cycle is used for drills and taps, and reamers and is particularly suited to wet conditions.	

Cycle title and description	
Cutter radius and linear profile checking Used to verify the specified form of a profiled cutting tool, this cycle is particularly suitable for ball nose cutters, cutters with a corner radius, and cutters with linear profiles. The Latch mode feature on the NCi-6 must be enabled. *	
Temperature compensation tracking Used to calibrate the NCTS system, this cycle should be run on a regular basis during machining operations to compensate for growth in the spindle axis and/ or radial measuring axis caused by temperature changes in the machine tool. *	

Cycle title and description	
Cutter radius measurement This cycle measures the effective ball nose or corner radius of a tool whilst it is rotating. *	

* The availability of this cycle is package-dependent.

Non-contact tool setting software for machining centres

Machine (Controller)	Part number	GoProbe app support [1]	Set and Inspect support [2]	Reporter support	TSM2 support
Brother (32A (A00) – post June 2002)	A-4012-0904				
Brother (32B (B00), 32C (C00), 32D (D00))	A-4012-1035	✓			✓
DMG MORI (Fanuc/Meldas)	A-4012-0953	✓			✓
Fagor (8060, 8065, 8070)	A-4016-0090	✓			
Fanuc Macro B (0M, 6M, 16-21M/*i*M, 10-15M, 15*i*M, 30-32*i*M) [4]	A-4012-0820	✓	✓	✓	✓
Haas	A-4012-0895				
Heidenhain (426, 430)	A-4014-0165				
Heidenhain (i530, i530 HSCI)	A-4014-0253				
Heidenhain (620/640 and i530 version 340 494-04 onwards)	A-4014-0672				✓
Heidenhain (i530 version 340 494-04 onwards) [5]	A-4014-0691				
Heidenhain (TNC7)	A-4014-0841				
Hitachi Seicos (Σ16, Σ18M)	A-4012-0848				
Hurco (WinMax)	A-4012-1141				
Makino (All variants)	A-4012-1615	✓			✓
Mazak (M32, M Plus, Fusion 640M) [6]	A-4013-0062				
Mazak angled beam (Fusion 640M) [6]	A-4013-0088				
Mazak VMCs, HMCs, Variaxis, VTC800 (Smooth, Matrix, Matrix Nexus, Smart) [4 6]	A-4013-0119	✓	✓	✓	✓
Mazak Versatech (Smooth, Matrix) [6]	A-4013-0225				
Mitsubishi Meldas (M3, M310, M320, M335, M500, M600, M700 series)	A-4012-0820	✓	✓	✓	✓
Okuma (OSP E100M, P100M, 200M, P300M, U100M, P500M) [4]	A-4016-1051	✓	✓		✓
Siemens (802D, 808D)	A-4014-0344				
Siemens (840D powerline with HMI) [3 7]	A-4014-0384				
Siemens (840D powerline and ShopMill with HMI) [3 7]	A-4014-0585				
Siemens (828D, 840D sl, SINUMERIK ONE) [3 7]	A-4014-0601	✓		✓	✓
Yasnac (MX3, J50)	A-4014-0020				
Yasnac angled beam (MX3, J50, I80, J100, J300)	A-4014-0025				

Quote part number when ordering.

Notes:

1 See page 8.1 for minimum macro software requirements.

2 See page 7.2 for minimum macro software requirements.

3 With optional HMI.

4 Includes angled beam option.

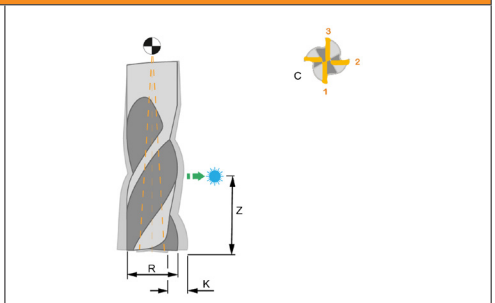
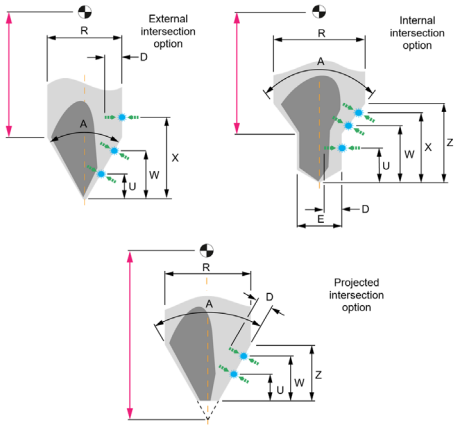
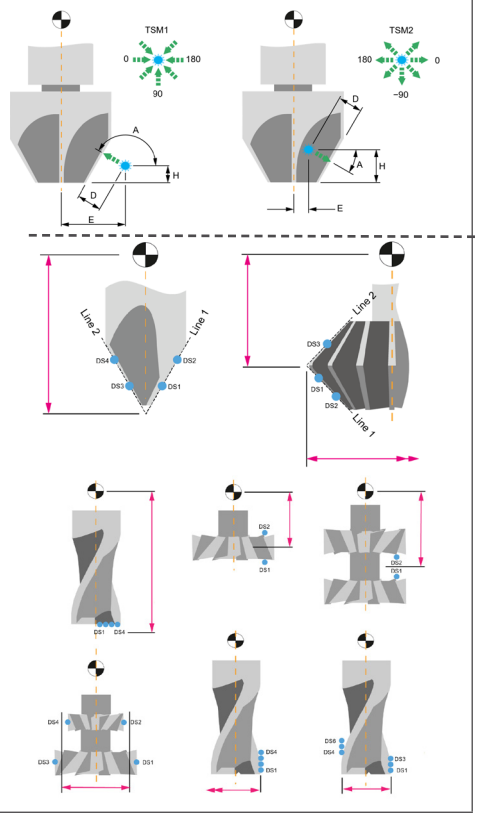
5 Includes angled beam/wet pack option.

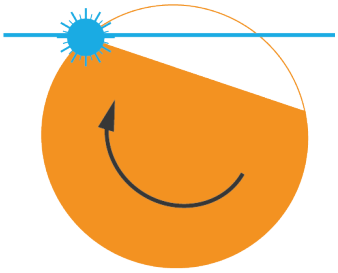
6 EIA/ISO and Mazatrol compatible.

7 The software is not supported on Siemens powerline controllers below version 5.0. Contact Renishaw support for earlier versions.

Advanced cycles “add-on” package for non-contact tool setting software

These cycles are to be used in alongside the host NCTS software package. They provide additional functionality and are typically used in advanced applications.

Cycle title and description	
Tool length and radius measurement with run-out control **Benefit:** Monitoring and controlling tool run-out will prolong tool life, reduce tool breakages, and likely improve surface finish. **Description:** After tool radius/diameter measurement, the tool ceases rotation and using spindle orientation, the tool is measured at several angles. The run-out value is calculated, which can be compared against a tolerance. **NOTE:** This cycle requires the machine to orientate the spindle to different angles. Programmable spindle orientation is not a standard function on all CNCs and its availability should be checked.	
Tool length setting to an intersection **Benefit:** Accurate length setting to an intersection allows customers to closely control drilling, chamfer, and countersink depths. **Description:** Used to set the tool length to an intersection. The tool end is established, and subsequent points are measured by approaching tangential to the tool edge. The measured points are used to calculate an intersection and the tool length is updated based on the result. The cycle supports three common tool profiles: • External intersection • Internal intersection • Projected intersection For more complex shapes, a combination of the point collector and construction cycles can be used.	
Point collector and construction **Benefit:** These cycles can be used in applications where the traditional “canned” cycles are too rigid. They are designed for users who want to build their own measurement routines, control the path between measuring points and the order in which measured points are taken. With this level of flexibility, cycle time can be reduced to the absolute minimum. **Point collector description:** Used to measure points on the surface of a tool at chosen angles and store the measured Sp-axis and Ra-axis values in variables (data sets – DS). The cycle is also used to establish an Sp-axis tool end beforehand. **Construction description, using two intersecting lines:** Used to find the intersection of two lines from the data sets collected using the point collector cycle. The cycle can be used to set the tool length, the tool radius/diameter or the tool length and radius/diameter. This cycle contains no axis movements. **Construction description, using maximum, minimum or average values:** A construction cycle that is specifically for using the maximum, minimum or average value from the data sets collected using the point collector cycle. The cycle can be used to set the tool length or the tool radius/diameter. This cycle contains no axis movements.	

Cycle title and description	
Spindle orientation cycle TSM2 **Benefit:** Knowing a tools orientation is important if undertaking Interpolation Turning or other complex machining tasks. **Description:** This cycle establishes a tools orientation in relation to the spindle reference position (SPOS=0). The tool is positioned, any spindle rotation ceases, and the tool is orientated to the start position, where measurement commences. At the end of the cycle, the tool will orientate to the average of the measured points unless the additive angle is used. In this case, the tool will orient to the average plus the additive angle.	

NCTS advanced cycles software

Machine (Controller)	Part number	Minimum version of non-contact tool setting software required
Fanuc Macro B / Mitsubishi Meldas [1]	A-4012-1657	A-4012-0820-AL
Mazak [1]	A-4013-0569	A-4013-0119-AK
Siemens [2]	A-4014-0809	A-4014-0401-0T or A-4014-0601-0U

Quote part number when ordering.

Notes:

[1] Does not support spindle orientation cycle.

[2] Supports TSM2 cycles only. Tool length setting to an intersection, probe collector and construction cycles are not supported.

TRS2 broken tool detection software for machining centres

Machine (Controller)	Part number
Brother, Fanuc, Haas, Heidenhain, Mazak Matrix, Mazak Fusion 640, Okuma, Siemens	A-5450-8701
Heidenhain 620/640 (with HMI)	A-4014-0769

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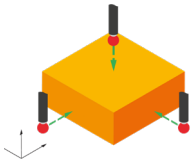
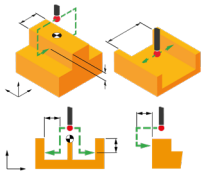
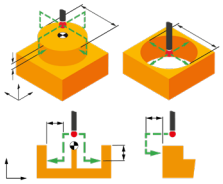
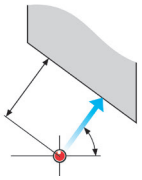
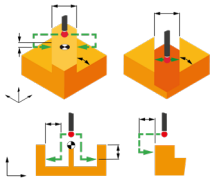
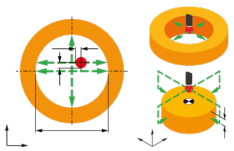
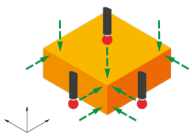
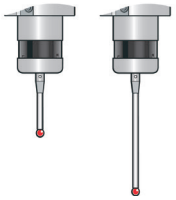
Probe software for multi-axis lathes and multi-tasking machines

Inspection software for multi-axis lathes and multi-tasking machines

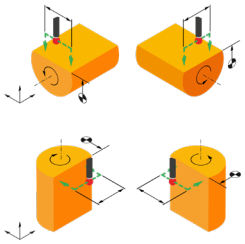
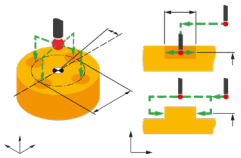
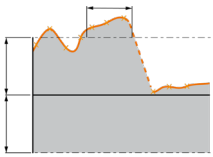
Given the increasing prevalence of multi-tasking machines in the manufacturing industry, Renishaw has enhanced the functionality of its Inspection software to enable it to be used for multi-axis machining tasks. The software can be set up – using a supplied installation utility – to suit a machine tool's configuration.

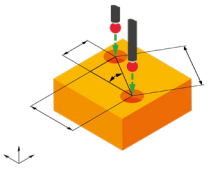
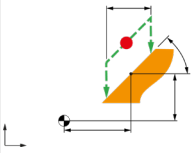
Cycle title and description	
XYZ surface measure Used to measure a surface to establish size or position.	
Web/pocket measure Used to measure a web or pocket feature using two measuring moves along the XY axis.	
Bore/boss measure Used to measure a bore or boss feature using four measuring moves along the XY axis.	
Angled surface measure using XYZ inputs Used to measure a surface feature using one vectored measuring move along the XY axis. *	

Cycle title and description	
Angled web/pocket measure Used to measure a web or pocket feature using two vectored measuring moves along the XY axis. *	
3-point bore or boss measure Used to measure a bore or boss feature using three vectored measuring moves along the XY axis. *	
Stock allowance Used to measure an X, Y or Z surface at defined positions to establish the maximum and minimum stock condition of the surface. *	
Multi-stylus calibration Several stylus ball configurations can be calibrated and stored. *	

continued ...

* The availability of this cycle is package-dependent.

Cycle title and description	
4th-axis measure Used to find the angle of a surface between two points. The 4th axis can then be rotated to compensate for the surface error. *	
Bore/boss on a PCD measure Used to establish the pitch circle diameter between a series of bores or bosses. *	
Statistical process control (SPC) cycle for tool offset updates Can be used in conjunction with measuring cycles to control the updating of tool offsets. An update is based on the average value of a sample of measurements. *	
Protected position move Used to protect the probe against damage. It can also be used to detect misloaded components.	
Probe stop Used to switch the probe off and close a print port.	

Cycle title and description	
C-axis find This cycle will take two readings by moving the C axis. External features can also be measured by moving the Z axis. *	
Feature-to-feature measure A no movement cycle that is used after two measuring cycles to determine feature-to-feature data. *	
Angled XY surface (angle find) measure Used to measure an X-axis or Y-axis surface at two positions to establish the angular position of the surface. *	
Probe start Used to switch the probe on and open a print port in readiness for printing results in subsequent measuring cycles.	

* The availability of this cycle is package-dependent.

Print program

On completion of each cycle it is possible to print the measured results via the RS232 port to a printer or computer with a suitable communication interface.

Inspection software for multi-axis lathes and multi-tasking machines

Machine (Controller)	Part number	GoProbe app support [1]	Set and Inspect support [2]
Biglia Smart-Turn (Fanuc)	A-4012-2120		
DN Solutions MX series (Fanuc)	A-4012-1016 [3]		
DN Solutions SMX series (Fanuc)	A-4012-1511 [3]		✓
DMG MORI NT/MT/NTX machines (Fanuc) **DMG MORI Y-axis lathes** (Fanuc/Meldas)	A-4012-0834 [3] A-4012-1301 [3]		
Fanuc/Meldas Y-axis lathes	A-4012-1092 [3]		
Haas Y-axis lathes	A-4012-1309 [3]		
Mazak Integrex e-Series lathes (Fusion 640 M Pro) **Mazak e-Series, i-Series, j-Series, Vortex eV, Vortex iV** (Smooth, Matrix, Matrix Nexus) **Mazak Integrex Mark IV lathes** (Matrix)	A-4013-0083 [3] A-4013-0106 [3] A-4013-0106 [3]		✓
Mazak Y-axis lathes – Integrex (not e-series) (e.g. Multiplex, Quadrex), QTN-Y (M Plus, Fusion 640 MT Pro) **Mazak Y-axis lathes – not Integrex series** (Smooth, Matrix)	A-4013-0030 [3] A-4013-0168 [3]		
Nakamura JX/MX/NTRX/ST (Fanuc)	A-4012-1834		
Okuma Multus, Macturn, VTM – TL/TD mode, G131 SKIP (OSP P100, P200, P300, P500)	A-4016-1056 [3]		✓
Siemens 840D, SINUMERIK ONE – multi-tasking and Y-axis lathes [4 5]	A-4014-0794		
Siemens Y-axis lathe	A-4014-0592		
Tsugami TMA8 (Fanuc)	A-4012-2023		

Quote part number when ordering.

Notes:

1 See page 8.1 for minimum macro software requirements.

2 See page 7.2 for minimum macro software requirements.

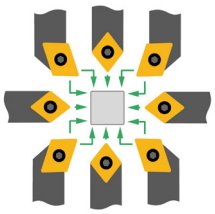
3 Print option available – function dependent on controller.

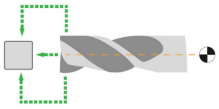
4 For machines with a B-axis nodding head only; it does not support a turret lathe.

4 With optional HMI.

Contact tool setting software for multi-axis lathes and multi-tasking machines

Renishaw's tool setting software for multi-axis lathes and multi-tasking machines can be installed and set up to suit each machine tool's configuration, via the supplied installation utility. It is possible to set tools manually or automatically. The manual tool setting cycle is used to manually position the tool close to the stylus before setting a tool. The automatic tool setting cycle is used to position the tool to the stylus automatically, as well as to set the tool.

Cycle title and description	
Turning tool measurement Positions the insert adjacent to the stylus using the tool nose vector before measuring the insert.	
Broken tool detection Used to check the length of a rotating tool for a broken tool condition. The cycle also checks for a 'long tool' condition in case the tool has pulled out during machining.	

Cycle title and description	
Milling tool measurement Positions the tool adjacent to the stylus before measuring the length or the length and diameter.	

Contact tool setting software for multi-axis lathes and multi-tasking machines

Milling and turning tool measurement cycles

Machine (Controller)	Part number	GoProbe app support [1]	Set and Inspect support [2]
Fanuc/Meldas Y-axis lathes	A-4012-0745 [3]		
Mazak lathe-style/milling-style measurement, Integrex i-Series, j-Series (Smooth, Matrix)	A-4013-0159 [3]		
Nakamura	A-4012-1651		

Quote part number when ordering.

Notes:

1 See page 8.1 for minimum macro software requirements.

2 See page <?> for minimum macro software requirements.

3 These packages typically require additional applications support to adapt the software to the machines' configuration. Contact Renishaw for further advice before purchasing these packages.

Turning tool measurement cycles

These cycles are for turning tool measurement on a multi-tasking machine. Use alongside an NCTS or a rotating CTS package if supplying a solution for all tool types.

Machine (Controller)	Part number	GoProbe app support [1]	Set and Inspect support [2]
Fanuc Macro B (0M, 6M, 16-21M/*i*M, 10-15M, 15*i*M, 30-32*i*M) [3 4]	A-4012-1516 [5]		
Heidenhain (640) [3 4]	A-4014-0724 [5]		
Siemens (810D, 828D, 840D, SINUMERIK ONE) [3 4 6 7]	A-4014-0735 [5]		

Quote part number when ordering.

Notes:

1 See page 8.1 for minimum macro software requirements.

2 See page 7.2 for minimum macro software requirements.

3 These packages support the APC.

4 Lathe tool measurement element can be used in conjunction with the relevant non-contact tool setting package if desired.

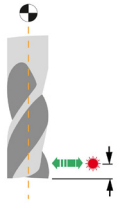
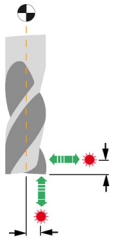
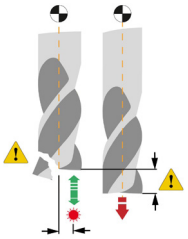
5 These packages typically require additional applications support to adapt the software to the machines' configuration. Contact Renishaw for further advice before purchasing these packages.

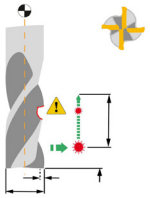
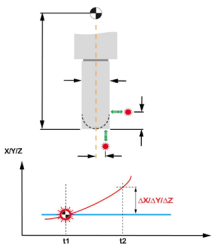
6 The software is not supported on Siemens powerline controllers below version 5.0. Contact Renishaw support for earlier versions.

7 With optional HMI

Non-contact tool setting software for multi-axis lathes and multi-tasking machines

The non-contact tool setter (NCTS) is best for applications where delicate tools are used and/or where a probe must not obstruct a machine's working envelope.

Cycle title and description	
Tool radius and diameter setting Used to measure the effective radius or diameter of a tool, this cycle allows the radius and diameter to be measured from the positive side of the beam, the negative side of the beam, or both sides of the beam.	
Tool length and radius setting Used to measure the effective length and radius/diameter of a tool, this cycle is particularly suitable for tools such as face mills, end mills, slot cutters, disk mill cutters, dovetail cutters and boring tools.	
Broken tool detection – plunge checking Used to check for broken cutting tools, this cycle uses a plunge check to move the tool in and out of the laser beam in the axis used for length setting. The cycle can also check for a 'long tool' condition in case the tool has pulled out during machining.	

Cycle title and description	
Cutting edge checking Used to check for missing or damaged edges, or the distance between minimum and maximum edge. The Latch mode feature on the NCi-6 must be enabled.	
Temperature compensation tracking Used to calibrate the NCTS system, this cycle should be run on a regular basis during machining operations to compensate for any growth in the spindle axis and/ or radial measuring axis caused by temperature changes in the machine tool.	

Non-contact tool setting software for multi-axis lathes and multi-tasking machines

Machine (Controller)	Part number	GoProbe app support [1]	Set and Inspect support [2]
DN Solutions MX series (Fanuc)	A-4012-1111		
DMG MORI NT/MT series (Fanuc)	A-4012-1020		
Mazak Integrex e-Series lathes (Fusion 640M)	A-4013-0092		
Mazak Y-axis lathes (Fusion 640M)	A-4013-0566		
Mazak Integrex e-Series, i-Series, Vortex e (Smooth, Matrix, Matrix Nexus)	A-4013-0123		✓
Mazak Integrex Mark IV lathes (Matrix) [3]	A-4013-0123		✓
Nakamura	A-4012-1826		

Quote part number when ordering.

Notes:

[1] See page 8.1 for minimum macro software requirements.

[2] See page 7.2 for minimum macro software requirements.

[3] Support for this machine model is limited to software versions up to and including version 0N.

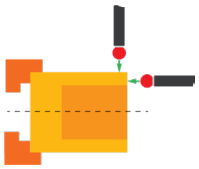
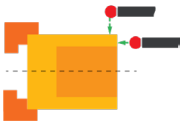
Probe software for lathes

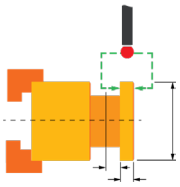
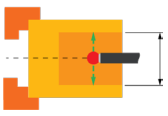
Inspection software for lathes

Inspection software for lathes is designed to provide operators with an effective way of setting work co-ordinate systems and performing component inspection. The software can be easily set up to suit the machine tool configuration using the supplied installation utility.

Cycle features include:

- **Size control:** Tool offsets can be corrected automatically.
- **Position control:** Work offsets can be updated for accurate component positioning.
- **Measurement error:** Can be stored in a spare tool offset.
- **Tolerance band:** Can be set to give an alarm if the feature is out of tolerance.
- **Measurement results:** Can be printed through the RS232 port to a printer or computer.

Cycle title and description	
XZ single-surface measure (probe vertical) Used to measure a surface to establish the size or position of the surface, this cycle is only used for a stylus in the vertical orientation.	
XZ single-surface measure (probe horizontal) Used to measure a surface to establish the size or position of the surface, this cycle is only used for a stylus in the horizontal orientation.	

Cycle title and description	
Web/pocket measure (probe vertical) Used to measure a web or pocket feature, this cycle uses two measuring moves along the Z axis.	
Web/pocket measure (probe horizontal) Used to measure a web or pocket feature, this cycle uses two measuring moves along the X axis.	

Inspection software for lathes

Machine (Controller)	Part number
Fanuc Macro A (0T MATE, A, B, C, F)	A-4012-0477
Fanuc Macro B (B, C, F, 0T, 6T, 10-15T, 15*i*T, 16-21T/*i*T, 30-32*i*T)	A-4012-0541 [1] [2]
Haas	A-4012-0874 [1]
Hitachi Seicos (LIII (L3), L10)	A-4012-0612 [1]
Hitachi Hi-cell (Sigma 16, 18, Lambda L3, L10)	A-4012-0843 [1]
Mazak QTN range (T-Plus, Fusion 640T) **Mazak QTN/QTS range** (Smooth, Matrix Nexus, Smart)	A-4013-0071 [1] A-4013-0137 [1]
Meldas (L64, L500)	A-4013-0028 [1]
Num (750, 760, 1060)	A-4012-0929
Okuma – basic cycles G30 SKIP (OSP U100L, P100L, P200L, P300L) **Okuma – TL/TD mode, G131 SKIP** (OSP P100L, P200L, P300L)	A-4016-1047 A-4016-1056 [1]
Siemens (810, 820, 840, 850, 880) **Siemens** (840C) **Siemens** (810D, 828D, 840D, SINUMERIK ONE) [3]	A-4014-0066 A-4014-0066 A-4014-0137
Yasnac (LX3)	A-4014-0011
C-axis measure option	
Fanuc Macro B (0T, 6T, 10-15T, 15*i*T, 16-21T/*i*T, 30-32*i*T)	A-4012-0653
Special stand-alone package, compatible with Inspection software (0T, 6T, 10-15T, 15*i*T, 16-21T/*i*T, 30-32*i*T)	A-4012-0709

Quote part number when ordering.

Notes:

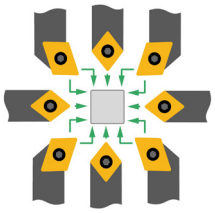
[1] Print option available – function dependent on controller.

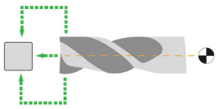
[2] This includes C-axis cycles.

[3] The software is not supported on Siemens powerline controllers below version 5.0. Contact Renishaw support for earlier versions.

Tool setting software for lathes

With Renishaw tool setting software for lathes it is possible to set tools manually or automatically. The manual tool setting cycle is used to manually position the tool close to the stylus before setting a tool, and the automatic tool setting cycle is used to position the tool to the stylus automatically, as well as to set the tool.

Cycle title and description	
Turning tool measurement Positions the insert adjacent to the stylus using the tool nose vector before measuring the insert.	

Cycle title and description	
Milling tool measurement Positions the tool adjacent to the stylus before measuring the length or the length and diameter.	

Machine (Controller)	Part number
Fanuc Macro A (0T MATE, A, B, C, F)	A-4012-0530
Fanuc Macro B 2-axis / 3-axis (0T, 6T, 10-15T, 15*i*T, 16-21T/*i*T, 30-32*i*T) [1]	A-4012-0745
Haas	A-4012-0877 [2]
Mazak QTN range (M Plus, Fusion 640T)	A-4013-0066
Meldas 2-axis (M600, M700, M800) **Meldas 3-axis** (M600, M700, M800)	A-4013-0254 A-4013-0250
Num (750, 760, 1060)	A-4012-0961
Okuma (OSP P200, P300, P500)	A-4016-1099
Siemens (810, 820, 840, 850, 880) **Siemens** (840C) **Siemens** (810D, 828D, 840D, SINUMERIK ONE) [3] **Siemens** (802D, 808D)	A-4014-0068 A-4014-0068 A-4014-0130 A-4014-0433

Quote part number when ordering.

Notes:

1 This package is not compatable with DMG-MORI machines. Contact your local Renishaw office for further advice.

2 Manual or manual with automatic option.

3 The software is not supported on Siemens powerline controllers below version 5.0. Contact Renishaw support for earlier versions.

Productivity+™ Scanning Suite

Productivity+™ is the collective name for a family of closely integrated software packages for use with Renishaw touch-trigger probes and the OSP60 scanning probe.

Productivity+™ Active Editor Pro

Productivity+ Active Editor Pro provides users with a simple-to-use environment for incorporating in-cycle measurement and inspection probe routines into machining cycles, with no requirement for G-code programming experience.

Simply import a component solid model and select the required feature geometry to generate a probe path. Manual programming options are available where no solid model exists.

Measurements, logic and updates may be added to existing NC machining code and then post processed to provide a single comprehensive NC program containing metal cutting and component inspection operations.

Productivity+™ CNC plug-in

The Productivity+™ CNC plug-in is typically used with the OSP60 probe with SPRINT™ technology, recording absolute XYZ surface position data with exceptional accuracy.

This on-machine software controls the OSP60 probe and the machine tool, providing significantly enhanced data processing and analysis capability in comparison with traditional methods.

Close integration of controller and CNC plug-in is designed for automatic closed-loop process control to reduce operator intervention.

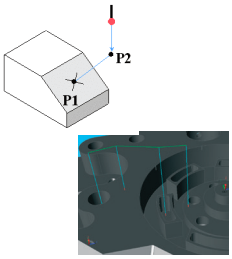
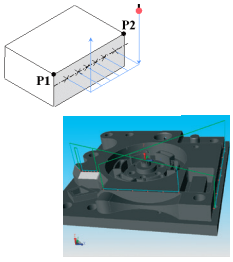
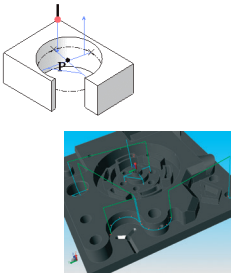
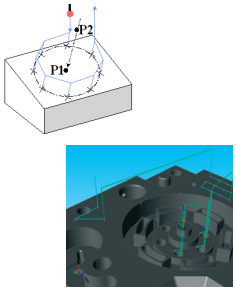
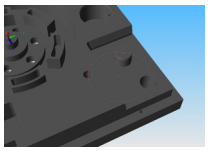
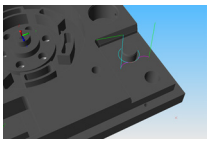
The software has its own online editor allowing measurement programs to be written and updated on the machine. Optionally, programs can be created off-line using Productivity+ Active Editor Pro.

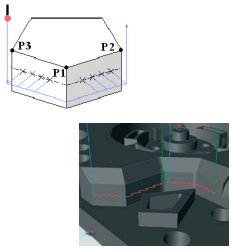
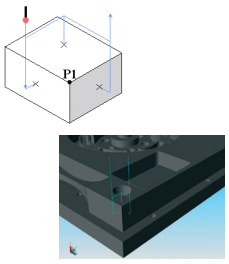
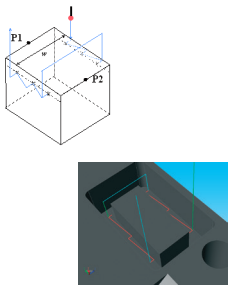
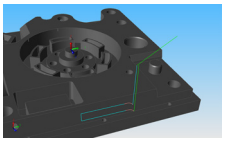
Prismatic feature measurement, including scanned circles and scanned planes, is supported as standard. Where inspection of more complex component geometry is required, a series of application-specific toolkits and cycles, each focused on an individual task or industry sector are available.

These specific software packages provide solutions for applications including high-speed measurement of blade sections, a sub-60 second health check to determine machine capability – perfect before machining high-value components – and fast and accurate scanning of free-form surfaces.

The Productivity+ CNC plug-in can also be used in conjunction with the Inspection Plus for OSP60 software package.

For more information, see **www.renishaw.com/sprint.**

Cycle title and description	
Point Used to add surface point features to an inspection cycle in a single axis or at any vector angle. Inspect free-form surfaces by creating an inspection cycle comprising multiple individual points.	
Line Used to create a series of parallel points across a uniform surface. Probing location and direction are automatically determined based on the model face and edge highlighted during selection.	
Circle Used to inspect bore, boss and circle features. Productivity+ Active Editor Pro automatically detects whether selected features are a bore, boss or arc.	
Plane Uses one of the available plane types (3-point, rectangular or radial) to inspect a uniform plane. The number of points required to select the plane, and the editable feature characteristics, are dependent on the plane type selected.	
Constructed features Perform inspection on point, line, circle, plane features that are constructed using elements of other measured features, rather than component solid model geometry.	
Scanned circles Used to scan bore, boss, circle and arc features. Productivity+ Active Editor Pro automatically detects whether selected features are a bore, boss, circle or arc. Only available when programming for the OSP60 probe.	

Cycle title and description	
2D corner Used to select and inspect two faces that form a non right-angle corner. Productivity+ Active Editor Pro automatically detects whether the selected faces form an 'internal' or 'external' corner, based on the angle between them.	
3D corner Used to select and inspect three faces that form a right-angle corner. Selections can be made from XY, XZ, or YZ planes with the orientation of the initially selected face determining subsequent selections.	
Web/pocket Used to select and inspect raised or recessed features that have parallel edges. After initial face and edge selection, Productivity+ Active Editor Pro automatically determines whether the feature is a web or a pocket, and only valid subsequent selections are highlighted when the mouse is moved across the model.	
Machine Update Update machine data (work co-ordinate system, tool geometry, machine variable, rotation) based on inspected feature information.	
Scanned planes Used to scan linear or circular planar surfaces. Only available when programming for the OSP60 probe.	

Productivity+™ software

Productivity+™ Active Editor Pro

Software	Part number
Productivity+ Active Editor Pro	A-4007-1400
Productivity+ Active Editor Pro SPRINT option [1]	CS-SOF-SW-02-2015
ACIS CAD importer	CS-SOF-SW-02-0010
Autodesk Inventor CAD importer	CS-SOF-SW-02-0012
CATIA CAD importer	CS-SOF-SW-02-0008
Pro/E CAD importer	CS-SOF-SW-02-0007
SolidWorks CAD importer	CS-SOF-SW-02-0011
UG/NX CAD importer	CS-SOF-SW-02-0009
All CAD importers	CS-SOF-SW-02-0005

Quote part number when ordering.

Note:

[1] Required to generate programs utilising the OSP60 scanning probe. Only compatible with the controllers listed in the Productivity+ CNC plug-in table below.

Machine (Controller)	Part number	
	Post processor	Active Editor Pro and post processor package
Brother (32B)	A-4007-5900	A-5226-5027
Fanuc Macro B (0M, 6M, 15M, 16-21M, 10-15*i*, 16-21*i*, 30-32*i*)	A-4007-5100	A-5226-5001
Haas	A-4007-5200	A-5226-5002
Heidenhain (620/640) **Heidenhain** (426/430) **Heidenhain** (i530)	A-4007-7200 A-4007-6900 A-4007-6000	A-5226-5030 A-5226-5028 A-5226-5010
Makino (Pro3, Pro5, Pro6)	A-4007-5400	A-5226-5004
Mazak (M32, Mplus, Fusion 640M, Matrix)	A-4007-5500	A-5226-5005
Mitsubishi Meldas (M3, 310, 320, 335, M500, M600, M730)	A-4007-5600	A-5226-5006
Mori Seiki (MSC-500 Series, MSC-800 Series)	A-4007-6600	A-5226-5016
Okuma (OSP P200, OSP P300)	A-4007-6300	A-5226-5013
Siemens (810D, 840D)	A-4007-6700	A-5226-5017

Quote part number when ordering.

Productivity+™ CNC plug-in (for OSP60 scanning applications)

Machine (Controller)	Part number	Inspection Plus for OSP60
DMG MORI (Celos with Fanuc MAPPS (Fanuc Series 30*i*, 31*i*, 32*i*))	A-4007-1810	A-4012-2000
Fanuc (Series 30*i*, 31*i*, 32*i*)	A-4007-1810	A-4012-2000
Makino (Pro5, Pro6 (Fanuc Series 30*i*, 31*i*, 32*i*))	A-4007-1810	A-4012-2000
Mazak (MATRIX 2, SmoothX, SmoothG, SmoothAi)	A-4007-1830	A-4013-2000
Mitsubishi (Kitamura Arumatik-Mi)	A-4007-1860	
Okuma (OSP-P300MA, OSP-P300SA)	A-4007-1840	
Siemens (SINUMERIK 840D sl, SINUMERIK ONE)	A-4007-1800	A-4014-2000

Quote part number when ordering.

Productivity+™ Toolkits (suitable for all controllers that support the CNC plug-in)

Software	Part number
Freeform Surface Processor	A-5750-2200
Freeform Surface Editor	A-5750-2210
Blade Processor	A-5750-2000
Blade Editor	A-5750-2010
Adaptive Cut Processor	A-5750-2260
Adaptive Cut Editor	A-5750-2270
Machine Health Check Processor	A-5750-2100
3D Feature Processor	A-5750-2370
3D Feature Editor	A-5750-2360
Best Fit Alignment Processor	A-5750-2290
Best Fit Alignment Editor	A-5750-2300

Productivity+™ Toolkit bundles [1]

Software	Part number
Freeform Surface	A-5750-2250
Blade [2]	A-5750-2050
Adaptive Cut [2]	A-5750-2280
3D Feature [3]	A-5750-2380
Best Fit Alignment [2]	A-5750-2310

Quote part number when ordering.

Note:

[1] Bundles include Editor and Processor software.

[2] A licensed Freeform Surface installation is required to use this Toolkit.

[3] 3D Feature functionality is included in the Freeform Surface Toolkit as standard.

SupaScan: ultra-fast point measurement and scanning system for machining centres

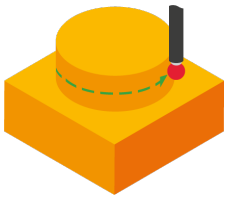
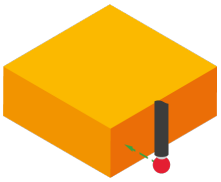
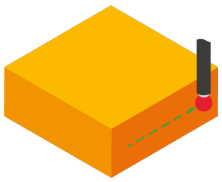
SupaScan is an easy-to-use on-machine probing system capable of workpiece scanning and exceptionally fast point measurement.

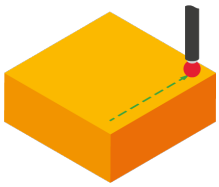
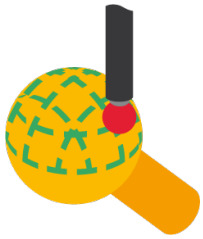
Driven by SPRINT™ technology, SupaScan is the fastest on-machine probing solution for workpiece set-up, delivering significant cycle time reduction on simple prismatic parts when compared with touch-trigger measurement solutions. The system can also be used to determine form information – detecting defects that would be missed by touch-trigger systems – and for surface condition monitoring, allowing issues such as excessive waviness, peaks, and steps on the surface to be identified, and corrections to be made whilst the component is still in the machine.

The system can be programmed using the G-code macros supplied. More experienced users may wish to generate programs manually to optimise these cycles to deliver further time savings; for example, adjusting standoff distance or feedrate, or programming the most efficient tool path between measurement points.

Measurement results are output to machine variables and can be used to control downstream processes. For reporting purposes, the optional Surface Reporter app provides a real-time, graphical representation of workpiece surface condition.

Available cycles and controller compatibility are listed in the tables below.

Cycle title and description	
CircleScan Used to measure a bore or boss feature. Bore scans are performed in a clockwise direction; boss scans are performed in a counterclockwise direction.	
QuickPoint Used to measure a point on a planar surface with cycle times significantly faster than traditional touch-trigger systems. The cycle uses the analogue capability of the OSP60 probe to achieve the fastest possible cycle time from a touch point.	
LineScan Used to measure a planar or angled line feature. Determines high point/low point error for form information determining maximum and minimum stock condition of the surface.	

Cycle title and description	
SurfaceCondition Measures surface condition by scanning a line. Detects and measures common defects such as excessive waviness, peaks, and steps on the surface.	
Calibration Used to perform a SupaScan probe calibration in 3D over a sphere. This cycle must be followed by a touch-trigger calibration cycle using Inspection Plus for OSP60.	
ProbeOnOff Switches the probe on and off and selects the required operational mode of the system.	

SupaScan

Machine (Controller)	Part number	GoProbe app support [1]	Set and Inspect support [2]	Inspection Plus for OSP60
Brother (CNC-C00)	A-5465-4001 [3]	✓		A-4012-2100
Fanuc (Series 0-21*i* MODEL A; Series 30-32*i* MODEL A; Series 0-3x*i* MODEL B)	A-5465-4001 [3]	✓	✓	A-4012-2000
Mazak (SmoothX)	A-5465-4001 [3]	✓	✓	A-4013-2000
Siemens (SINUMERIK 840D sl and 828D)	A-5465-4001 [3]	✓		A-4014-2000

Quote part number when ordering.

Notes:

1 See page 8.1 for minimum macro software requirements.

2 See page 7.2 for minimum macro software requirements.

3 SupaScan is delivered on a DPU-1 data processing unit containing master files for all supported controllers. A SupaScan kit containing all required system hardware (DPU-1, probe, interface, receiver and cabling) is also available. To order, quote part number A-5465-2000.

AxiSet™ Check-Up software for machine tools

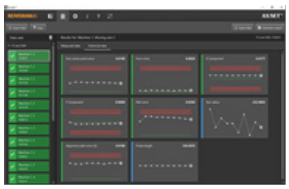
AxiSet™ Check-Up is a cost-effective solution for checking and optimising kinematic performance. It takes just a few minutes to help multi-axis machining centre and multi-tasking machine users identify the poor machine alignment, geometry and pivot point errors that can cause extended process-setting times and non-conforming parts. Where possible, AxiSet Check-Up automatically updates on-machine pivot point parameters.

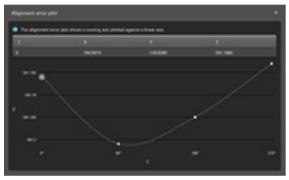
By providing machine users with a fast and accurate health check of rotary axis pivot points, AxiSet Check-Up assists in building the process foundation by maximising the stability of the environment and machine.

The AxiSet Check-Up app provides a detailed and graphical representation of the measurement data produced by the AxiSet Check-Up macro software. The app can help to make PASS or FAIL decisions based on defined tolerances. Machine performance can be tracked over time, using the app's historical data chart function.

The AxiSet Check-Up app is installed onto a PC or tablet running Windows 10 (32 or 64 bit) or above. The AxiSet Check-Up app must be licensed before it can be used. Perpetual and evaluation licences are available.

NOTES: For prerequisites, see the table on page 6.2.
AxiSet Check-Up packages must be sold with on-site engineering support. Contact your local Renishaw office for more information.





AxiSet Check-Up macro software

CAUTION: Consider the machine tool configuration and therefore, any associated risks before ordering a kit as, this might lead to extensive development. Use the AxiSet survey to determine which of the following packages is compatible with the machine tool configuration.

Machine (Controller)	Auto update	Auto calculation [1]	Part number	Minimum Inspection Plus requirements
Brother (32B(B00), 32C(C00), 32D(D00))	✓	✓	A-5642-4161	A-4012-1028-0M
DMG MORI table/table (Fanuc/Meldas)	✓		A-5642-4401 [2]	
DMG MORI NT/MT machines (Fanuc/Meldas)		✓	A-5642-4405 [2]	
DN Solutions MX/SMX			A-5642-4711 [2]	
Fanuc/Meldas, table/table	✓	✓	A-5642-4120 [3]	A-4012-0516-0V
Fanuc/Meldas, head/table	✓	✓	A-5642-4148 [3]	A-4012-0516-0V
Fanuc/Meldas, head/head	✓	✓	A-5642-4144 [3]	A-4012-0516-0V
Haas, table/table			A-5642-4611 [2]	
Haas NGC, table/table		✓	A-5642-4616 [2]	
Heidenhain, table/table (i530 (no GUI))	✓		A-5642-4135 [2]	N/A
Heidenhain, head/table (i530 (no GUI))	✓		A-5642-4130 [2]	N/A
Heidenhain, table/table (620/640 (no GUI))	✓		A-5642-4543 [2]	N/A
Hurco WinMax, table/table			A-5642-4105 [3]	A-4012-1126-0F and earlier
Kitamura (Arumatik Mi)	✓		A-5642-4166	A-4012-0516-0V
Mazak Integrex e-Series, i-Series (Matrix, Fusion)			A-5642-4009 [2]	
Mazak Integrex Mark IV lathes (Matrix)			A-5642-4005 [2]	
Mazak Variaxis (Matrix, Fusion)			A-5642-4001 [2]	
Okuma MU or 3+2 machine, table/table (OSP E100 to P300M)	✓	✓	A-5642-4210 [2]	
Okuma MULTUS, MACTURN, VTM (OSP P200, P300L)		✓	A-5642-4200 [2]	
Siemens table/table (810D/840D, SINUMERIK ONE) [4]	✓	✓	A-5642-4501 [2]	
Siemens head/table (810D/840D, SINUMERIK ONE) [4]	✓	✓	A-5642-4523 [3]	A-4014-0356-0A
Siemens head/head (840D, SINUMERIK ONE) [4]	✓	✓	A-5642-4519 [2]	
Tsugami	✓		A-5642-4723	A-4012-2023-0A

Quote part number when ordering.

Notes:

1 Calculates the correct pivot points but does not automatically correct the machine.

2 These packages are standalone and do not require Inspection Plus. The program numbers have been altered to avoid other Renishaw software.

3 Inspection Plus software must be installed on the CNC in order for AxiSet Check-Up to work. Contact your local Renishaw office for more information and compatibility

4 The software is not supported on Siemens powerline controllers below version 5.0. Contact Renishaw support for earlier versions.

AxiSet Check-Up app

Supported on a PC or tablet running Microsoft Windows 10 (32 or 64 bit) or above.

	Part number
AxiSet Check-Up app (includes perpetual licence)	A-5642-3001

AxiSet Check-Up app licence codes

This licence is activated using an activation code that is supplied to the user via email.

	Licence code
Perpetual licence for the AxiSet Check-Up app. Typically used to upgrade an evaluation licence to perpetual use.	CS-SOF-SW-02-AXISET

Inspection and tool setting GUIs

Renishaw graphical user interface (GUI) software packages provide user-friendly, intuitive environments which require minimal user input to generate and select probing cycles.

With these seamlessly integrated machine tool probing apps, users of all levels of experience can take advantage of the many benefits offered by Renishaw probing systems.

The packages are designed for use where Set and Inspect cannot be used.

GoProbe GUIs

Machine (Controller)	Part number	Prerequisites
Fanuc ROBODRILL (31*i* Model B/B5)	A-4012-4000	DiB series or later edition Fanuc ROBODRILL with software option for Fanuc Picture Executor (A02B-0326-R644, A02B-0327-R644) ROBODRILL Application (47HG) (version 16 or later) Inspection Plus – A-4012-0516 (version AB or later) Contact tool setting software – A-4012-0584 (version AF or later) Non-contact tool setting software – A-4012-0820
Fanuc iHMI (15 in screens)	A-4012-4003	iHMI interface with option for Fanuc Picture Executor. For 0iMF-plus, iHMI version 07.0 (60X1) or later is required. Inspection Plus – A-4012-0516 (version AB or later) Contact tool setting software – A-4012-0584 (version AF or later) Non-contact tool setting software – A-4012-0820
Brother (D00)	A-4012-4022	Firmware version 4.001 or later. Inspection Plus – A-4012-1028 (version 0M or later). AxiSet Check-Up software – A-5642-4161 (version 0B or later). Contact tool setting software – A-4012-1007 (version 0T or later). LTS (length tool setting) software – A-5475-8700. Non-contact tool setting software – A-4012-1035 (version 0J or later).
Mitsubishi M80, M830S, M850S [1] **NOTE:** This kit is for OEM, dealer and Mitsubishi installation only.	A-4012-4010	Software level C4 or higher. This includes Mitsubishi Interactive Cycle Insertion function for milling machines. Mitsubishi ICI installation file (to be obtained from Mitsubishi). Parameter 8991 must be set to 1 to allow interactive cycles to be displayed. Inspection Plus – A-4012-0516 (version AB or later) Contact tool setting software – A-4012-0584 (version AF or later) LTS (length tool setting) software – A-5475-8700-0G

Quote part number when ordering.

Note:

[1] For Mitsubishi CNCs running Microsoft Windows® (M800W), Set and Inspect is recommended. See page 7.2.

On-machine apps

The on-machine apps are Windows®-based software applications to support machine tool probing functionality. These on-machine apps consist of Set and Inspect and Reporter and can be installed onto a Windows®-based CNC controller or a Windows tablet connected to the CNC controller via Ethernet.

For more information, visit: **www.renishaw.com/machinetoolapps**.

On-machine apps hardware compatibility

Machine	Part number		Hardware supported	
	Set and Inspect	Reporter	Controller [1]	Machine tool type
DN Solutions	A-5999-2900		CUFOS	VMCs, HMCs, SMX
Elliot Matsuura	A-5999-2200	A-5999-4200	0*i*-B/C, 0*i*-D, 0*i*-F, 15*i*, 16*i*, 18*i*, 21*i*, 30*i*, 31*i*, 32*i* [3]	VMCs, HMCs
Fanuc	A-5999-1200	A-5999-4200	0*i*-B/C, 0*i*-D, 0*i*-F, 15*i*, 16*i*, 18*i*, 21*i*, 30*i*, 31*i*, 32*i* [3]	VMCs, HMCs
Hartford (Fanuc)	A-5999-1800	A-5999-4800 [2]	FHAP04 (Fanuc)	VMCs, HMCs
Hartford (Mitsubishi)	A-5999-1900	A-5999-4900 [2]	MHAP04 (Mitsubishi)	VMCs, HMCs
Innoserv	A-5999-2000	A-5999-4500	Arumatik-Si Mitsubishi M730, Arumatik-Mi Mitsubishi M850	VMCs, HMCs
Kitamura	A-5999-1600	A-5999-4600	Arumatik-Si Mitsubishi M730, Arumatik-Mi Mitsubishi M850	VMCs, HMCs
Matsuura	A-5999-2400	A-5999-4200	0*i*-B/C, 0*i*-D, 0*i*-F, 15*i*, 16*i*, 18*i*, 21*i*, 30*i*, 31*i*, 32*i* [3]	VMCs, HMCs
Mazak	A-5999-1300	A-5999-4300	MAZATROL Smooth Ai, SmoothX, SmoothG and SmoothEz [4]	VMCs, HMCs, VARIAXIS, INTEGREX e-V, e-H and i/j
Micro Dynamics	A-5999-2600	A-5999-4500	Mitsubishi M800W	VMCs, HMCs
Mitsubishi	A-5999-1500	A-5999-4500	M80VW / M800VW	VMCs, HMCs
Nakamura	A-5999-2800		NT Smart X (Fanuc 31i)	ST, NT, MX
Okuma	A-5999-1400	A-5999-4400	OSP P300 [5], P500 [6]	VMCs, HMCs, Lathes, VTL, MULTUS, MacTurn, VTM
Siemens		A-5999-4700	SINUMERIK 840D sl with PCU50 [7]	
Takumi	A-5999-3000	A-5999-4200	0*i*-B/C, 0*i*-D, 0*i*-F, 15*i*, 16*i*, 18*i*, 21*i*, 30*i*, 31*i*, 32*i* [2]	VMCs, HMCs
Tongtai	A-5999-2100	A-5999-4200	0*i*-B/C, 0*i*-D, 0*i*-F, 15*i*, 16*i*, 18*i*, 21*i*, 30*i*, 31*i*, 32*i* [2]	VMCs, HMCs

Quote part number when ordering.

Notes:

1 All controllers require minimum specification of .Net 4.6.1 and Windows 7 SP1.

2 Reporter must be installed separately (It is not automatically installed with the corresponding Set and Inspect installer).

3 Ethernet or HSSB enabled controller. Focas 1/2 library (API).

4 Mazak API must be installed.

5 Either the Okuma THINC API version 1.19 or later, or the OSP API Kit (including THINC API) must be installed. Set and Inspect version 4.8 (A-5999-1400-0V) or later includes Reporter version 4.5 (A-5999-4400-0N) for support of legacy API versions.

6 Either the Okuma THINC API version 1.19 or later, or the OSP API Kit (including THINC API) must be installed. Set and Inspect version 4.8 (A-5999-1400-0V) or later includes Reporter version 4.5 (A-5999-4400-0N) or later and supports this configuration.

7 Windows OS. SINUMERIK INTEGRATE RUN MYHMI/3GL must be enabled.

Set and Inspect software compatibility

Machine	Part number	Minimum software version required [1]				
		Inspection Plus	Contact tool setting software	Non-contact tool setting software	AxiSet™	Inspection Plus for OSP60 [2]
DN Solutions VMCs, HMCs SMX	A-5999-2900	A-4012-0516-AV A-4012-1511-0J	A-4012-0584-AT	A-4012-0820-AW		
Elliot Matsuura	A-5999-2200	A-4012-0516-AV	A-4012-0584-AT	A-4012-0820-AW		
Fanuc	A-5999-1200	A-4012-0516-AV	A-4012-0584-AT	A-4012-0820-AW	A-4016-1051-0D	A-4012-2000-0C
Hartford (Fanuc)	A-5999-1800	A-4012-0516-AV	A-4012-0584-AT	A-4012-0820-AW		
Hartford (Mitsubishi)	A-5999-1900	A-4012-0516-AV	A-4012-0584-AT	A-4012-0820-AW		
Innoserv	A-5999-2000	A-4012-0516-AV	A-4012-0584-AT	A-4012-0820-AW		
Kitamura	A-5999-1600	A-4012-0516-AV	A-4012-0584-AT	A-4012-0820-AW	A-5642-4120-0P	
Matsuura	A-5999-2400	A-4012-0516-AV	A-4012-0584-AT	A-4012-0820-AW		
Mazak VMCs, HMCs Variaxis Integrex	A-5999-1300	A-4013-0112-AT A-4013-0112-AT A-4013-0106-BD	A-4013-0133-AE A-4013-0133-AE A-4013-0330-0B (Advanced Measurement System tool setting)	A-4013-0119-AR A-4013-0119-AR A-4013-0123-AK		A-4013-2000-0C A-4013-2000-0C
Micro Dynamics	A-5999-2600	A-4012-0516-AV	A-4012-0584-AT	A-4012-0820-AW		
Mitsubishi	A-5999-1500	A-4012-0516-AV	A-4012-0584-AT	A-4012-0820-AW		
Nakamura	A-5999-2800	A-4012-1834-0C	A-4012-1651-0D	A-4012-1826-0D		
Okuma VMCs HMCs Lathes VTL MULTUS MacTurn VTM	A-5999-1400	A-4016-1035-AD A-4016-1035-AD A-4016-1056-0N A-4016-1056-0N A-4016-1056-0N A-4016-1056-0N A-4016-1056-0N	A-4016-1039-0W A-4016-1039-0W	A-4016-1051-0F A-4016-1051-0F	A-5642-4200-0G A-5642-4200-0G A-5642-4200-0G	
Takumi	A-5999-3000	A-4012-0516-AV	A-4012-0584-AT	A-4012-0820-AW		
Tongtai	A-5999-2100	A-4012-0516-AV	A-4012-0584-AT	A-4012-0820-AW		

Quote part number when ordering.

Note:

[1] The appropriate macro software package must be installed on the machine prior to using Set and Inspect.

[2] For use with SupaScan.

Reporter

Reporter is an easy-to-use, on-machine probing app for customers who wish to view component measurement data on the CNC machine tool controller. The app is installed onto a Windows®-based CNC controller or a Windows tablet connected to the controller via Ethernet.

For more information, visit: **www.renishaw.com/machinetoolapps**.

Machine	Part number	Minimum software version required [1]		
		Inspection Plus	Contact tool setting software	Non-contact tool setting software
Fanuc/Meldas	A-5999-4200	A-4012-0516-AV	A-4012-0584-AW	A-4012-0820-AT
Hartford (Fanuc)	A-5999-4800	A-4012-0516-AV	A-4012-0584-AW	A-4012-0820-AT
Hartford (Mitsubishi)	A-5999-4900	A-4012-0516-AV	A-4012-0584-AW	A-4012-0820-AT
Kitamura	A-5999-4600	A-4012-0516-AV	A-4012-0584-AW	A-4012-0820-AT
Mazak	A-5999-4300			
VMCs, HMCs		A-4013-0112-AT	A-4013-0133-AE	A-4013-0119-AR
Variaxis		A-4013-0112-AT	A-4013-0133-AE	A-4013-0119-AR
Integrex		A-4013-0106-BD	A-4013-0330-0B (Advanced Measurement System tool setting)	A-4013-0123-AK
Mitsubishi	A-5999-4500	A-4012-0516-AV	A-4012-0584-AW	A-4012-0820-AT
Okuma	A-5999-4400	A-4016-1035-AD		
VMCs		A-4016-1035-AD	A-4016-1039-0W	A-4016-1051-0F
HMCs		A-4016-1035-AD	A-4016-1039-0W	A-4016-1051-0F
Lathes		A-4016-1056-0N		
VTL		A-4016-1056-0N		
MULTUS		A-4016-1056-0N		
MacTurn VTM		A-4016-1056-0N		
Siemens	A-5999-4700	A-4012-0356-0T		A-4014-0601-AA

Quote part number when ordering.

Notes:

[1] The appropriate macro software package must be installed on the machine prior to using Reporter.

Productivity+ support

Reporter can now be used in conjunction with Productivity+ (CNC plug-in and Active Editor Pro).

Productivity+ v3.6 onwards is required to display measurement cycle results in Reporter.

Data export licensed option

Measurement data can be exported from Reporter by purchasing and activating the Data export licensed option. This option allows users to export measurement data to a .csv file.

Exported data can be stored as part records for traceability, or imported into the user's in-house quality analysis software, providing manufacturers with valuable insights into their machining processes.

Licensed option	Licence code
Data export	CS-SOF-SW-02-REPR

Quote part number when ordering.

The *Data export licensed* option is activated using an activation code supplied to the user via email.

Smartphone apps for machine tool products

Smartphone apps provide information at a user's fingertips in a simple, convenient format. Available globally in a wide range of languages, Renishaw's free-of-charge apps are ideal for both new and experienced users.

For more information, visit: **www.renishaw.com/smartphoneapps**.

Renishaw's range of free-of-charge smartphone apps are available globally on the App Store™ and on GooglePlay.

Download on the App Store

GET IT ON Google Play

Renishaw apps are available in China via Xiomi and Huawei.

GoProbe app

The GoProbe app creates a probing routine with just a few quick taps. Simply select the required cycle and populate the data entry fields. The result is a single-line command that is entered into the CNC controller.

The table below lists the macro software packages supported by the GoProbe app.

Controller	Recommended Inspection Plus software version [1]	Minimum software version required			
		Inspection Plus	Contact tool setting software	Non-contact tool setting software	Inspection Plus for OSP60 [2]
Brother	A-4012-1028-0H	A-4012-1028-0E	A-4012-1007-0K	A-4012-1035	A-4012-2100-0C
DMG MORI (Fanuc/Meldas)	A-4012-0936-0U	A-4012-0936-0M	A-4012-1555	A-4012-0953	
Fagor 8055		A-4016-0067-0A			
Fagor 8060 / 8065 / 8070		A-4016-0071-0D		A-4016-0090	
Fanuc/Meldas	A-4012-0516-AE	A-4012-0516-0M	A-4012-0584-AF	A-4012-0820	A-4012-2000-0C [3]
Hartford Hartrol		A-4013-0516-0M			
Makino (Renishaw standard)	A-4012-1611-0C	A-4012-1611-0C	A-4012-1580-0B	A-4012-1615-0B	
Makino (Singapore)	A-4012-1611-0H	A-4012-1611-0C	A-4012-1580-0B	A-4012-1615-0B	
Mazak	A-4013-0112-0T	A-4013-0112-0T	A-4013-0133-0Y	A-4013-0119	A-4013-2000-0C
Mazak VTC-800		A-4013-0205-0J	A-4013-0133-0Y	A-4013-0119	A-4013-2000-0C
Okuma VMC	A-4016-1035-0W	A-4016-1035-0W	A-4016-1039-0U	A-4016-1051-0D	
Okuma HMC	A-4016-1035-0W	A-4016-1035-0W	A-4016-1071-0D	A-4016-1051-0D	
Siemens	A-4014-0356-0R	A-4014-0356-0E	A-4014-0396-0M	A-4014-0401	A-4014-2000-0C
TOSNUC		A-4012-0949-0F			

Quote part number when ordering.

Notes:

[1] Supports *all* functionality within the app.

[2] For use with SupaScan.

[3] Fanuc support only.

NC4 app

The NC4 app makes configuring and supporting the range of NC4 non-contact tool setters simple. Engineers have a single point of reference for maintenance and troubleshooting tasks at their fingertips.

The table below lists the macro software packages supported by the NC4 app.

Controller	Minimum non-contact tool setting software version required
Brother	A-4012-1035-0F
DMG MORI (Fanuc/ Meldas)	A-4012-0953-0N
Fanuc/Meldas	A-4012-0820-AH
Heidenhain (620/640)	A-4014-0672-0K
Heidenhain (TNC7)	A-4014-0841-0A
Makino	A-4012-1615-0F
Mazak	A-4013-0119-AE
Okuma	A-4016-1051-0F
Siemens	A-4014-0401-0P
Siemens (828/840D)	A-4014-0601-0N

Quote part number when ordering.

Probe Setup app

The Probe Setup app provides users with a simplified method of customising their Renishaw probe settings that is faster and easier than following traditional printed instructions.

All machine tool touch-trigger spindle probes that support Trigger Logic™ or Opti-Logic™ are supported by the app.

HP arms app

The HP arms app provides engineers with an interactive support app for the range of Renishaw high-precision tool setting arms. The app makes system configuration, maintenance and troubleshooting tasks simple with easy-to-follow animations and step-by-step instructions.

Renishaw HPMA, HPMA-X, HPPA and HPRA tool setting arms are supported by the app.

Legacy software

Although Renishaw's legacy software products offer backward compatibility, the available functionality will be limited compared to Renishaw's newer machine tool software packages.

Inspection Plus software for machining centres

Inspection Plus is a totally integrated package of software that includes vector and angle measure options, print options (where this controller option is available) and an extended range of cycles. It also includes one-touch or two-touch probing options, tool offset compensation by percentage of error, and output data stored in an accessible variable stack.

Machine (Controller)	RENGAGE™ probes only (MP700, OMP400 and RMP600)	
	Part number	Approximate memory required (KB)
Haas	A-4012-0890	46.5
Hitachi Seicos (Σ10, Σ16, Σ18, MIII (M3), Lambda)	A-4012-0761	46.2
Mazak (M32, M Plus and Fusion 640M) [1]	A-4013-0040	47.0
Mitsubishi Meldas (M3, M310, M320, M330, M335 series, M50, M500 series, M64, Magic 64, M600, M700, M800 series)	A-4012-0685	47.0
Okuma (OSP 5020M, 700M, 7000M)	A-4016-1009	
Siemens (810D, 828D, 840D) [2]	A-4014-0362 [3]	72.0
Yasnac (MX3, J50, I80, J100, J300)	A-4014-0104 [3]	49.0

Quote part number when ordering.

Notes:

[1] EIA/ISO and Mazatrol compatible.

[2] The software is not supported on Siemens powerline controllers below version 5.0. Contact Renishaw support for earlier versions.

[3] Print option available – function dependent on controller.

Inspection software for machining centres

Basic inspection and job set-up software with the ability to set work offsets, update tool offsets and print inspection results (where this controller option is available). Suitable for use by an operator or part programmer.

Cycle features include:

- **Size control:** Tool offsets can be corrected automatically.
- **Position control:** Work offsets can be updated for accurate component positioning.
- **Measurement error:** Can be stored in a spare tool offset.
- **Tolerance band:** Can be set to give an alarm if the feature is out of tolerance.
- **Measurement results:** Can be printed out through the RS232 port to a printer or computer.

Machine (Controller)	Part number	Approximate memory required (KB)
Fadal (32MP, CNC88, CNC88HS)	A-4016-0036	24.0
Fanuc Macro A (0M MATE, 0MA, 0MB, 0MC)	A-4012-0542	11.0
Fanuc Macro B (0M, 6M, 16-21M/*i*M, 30-32*i*M)	A-4012-0496	13.8
Fanuc Macro B (10-15M, 15*i*M)	A-4012-0540	13.8
GE (2000)	A-4016-0057	5.8
Haas	A-4012-0620	13.0
Heidenhain (TNC 151, 155, 351, 355 (A, B, BR, P, Q and QR series) 407, 415, 2500, 360)	A-4014-0050	8.2
Heidenhain print option (Macro and PC utility)	A-4014-0056	–
Mazak (M32, Fusion 640M (EIA/ISO offsets), M32, M Plus, Fusion 640M) [1]	A-4013-0005	14.3
Mitsubishi Meldas (M3, M310, M320, M335, M500, M600, M700 series)	A-4013-0005	14.3
Selca (S3000, S4000)	A-4014-0092	13.0
Siemens (810, 820, 840, 850, 880, 840C)	A-4014-0054	17.9
TOSNUC (600, 777, 800M)	A-4012-0610	12.0
Yasnac (Yasnac MX2)	A-4014-0009 [2]	12.0
Yasnac (Yasnac MX2 (Matsuura))	A-4014-0008 [2]	12.0
Yasnac (Yasnac MX3 (Matsuura using 3 user inputs))	A-4014-0006 [2]	16.0
Yasnac (Yasnac MX3, J50)	A-4014-0016 [2]	13.0
Yasnac (I80, J100, J300 (Matsuura M80))	A-4014-0013 [2]	14.0

Quote part number when ordering.

Notes:

[1] EIA/ISO and Mazatrol compatible.

[2] Print option available – function dependent on controller.

Additions to Inspection software for machining centres

Several packages to enhance and extend the capabilities of the standard Inspection software, including vector measuring, angle measurement and a 5-axis option. On completion of each cycle, it is possible to print out the feature size and position via the RS232 port to a printer or computer with a suitable communications interface.

Machine (Controller)	Vector measurement		Angle measurement	
	Part number	Approximate memory required (KB)	Part number	Approximate memory required (KB)
Fanuc Macro B (0M, 6M, 10-15M, 15*i*M, 16-21M/*i*M, 30-32*i*M)	A-4012-0527	8.4	A-4012-0549	3.3
Yasnac (I80 (Matsuura M80))	A-4012-0527	8.4	–	–

Quote part number when ordering.

Multi-axis Inspection software for machining centres

Measuring in G17, G18 or G19 planes.

Machine (Controller)	Part number	Approximate memory required (KB)
Fanuc Macro B (0M, 16-21M/*i*M, 30-32*i*M)	A-4012-0640 [1]	38.0
Fanuc Macro B (10-15M, 15*i*M)	A-4012-0578 [1]	37.5
Siemens (810D, 840D) [2]	A-4014-0147 [1]	71.0

Quote part number when ordering.

Notes:

[1] Print option available – function dependent on controller.

[2] The software is not supported on Siemens powerline controllers below version 5.0. Contact Renishaw support for earlier versions.

Renishaw GUI software for Okuma OSP P200 controllers

Machine (Controller)	Description	Part number
Okuma machining centre (OSP P200M)	Inspection/tool setting GUI [1]	A-4016-1063
Okuma lathe/multi-tasking (OSP P200L)	Inspection/AxiSet GUI [2 3]	A-4016-1075

Quote part number when ordering.

Notes:

[1] Requires the following macro software packages:

Inspection Plus (A-4016-1035-0L or higher).

Contact tool setting (A-4016-1039-0N or higher).

Non-contact tool setting (A-4016-1021).

[2] Requires the following macro packages:

Inspection Plus (A-4016-1056-0E or higher).

AxiSet (A-5642-4201-0D or higher).

[3] Requires XYZ gauging.

EasyProbe inspection software for machining centres

EasyProbe software for machining centres provides simple and fast job set-up and measuring routines that require minimal programming skills.

Cycle features include:

- **Position control:** Work offsets can be updated for accurate component positioning.
- **Measurement results/errors:** Results and errors can be stored in a variable list.
- **Angle find:** The angle of a surface can be found to update a fourth axis or enable G68 co-ordinate rotation.

Machine (Controller)	Part number	Approximate memory required (KB)
Fanuc Macro B (0M, 6M, 10-15M,15*i*M, 16-21M/*i*M, 30-32*i*M)	A-4010-0001	6.0
Haas	A-4010-0001	6.0
Mitsubishi Meldas (M3, M310, M320, M330, M520, M600, M700 series)	A-4010-0001	6.0
Siemens (802D) **Siemens** (810D, 828D, 840D) [1]	A-4014-0348 A-4014-0391	10.0 10.0
Yasnac (MX3, I80, J50, J100, J300)	A-4010-0001	6.0

Quote part number when ordering.

Note:

[1] The software is not supported on Siemens powerline controllers below version 5.0. Contact Renishaw support for earlier versions.

EasySet software for machining centres

EasySet enables the operator to manually position the probe stylus at a suitable start position before running an inspection cycle, thereby minimising programming requirements.

NOTE: Inspection Plus software must be installed on the machine controller prior to using EasySet cycles.

Machine (Controller)	Part number	Approximate memory required (KB)
Haas	A-4012-0899 [1]	2.5

Quote part number when ordering.

Note:

[1] Print option available – function available on controller.

EasyCycle software for Mazak machines

EasyCycle is intended for people who are only familiar with Mazak's conversational programming language (Mazatrol) and not conversant with EIA/ISO programming. EasyCycle will select a probe, pre-position it, run a Renishaw measurement cycle and then return it to a safe position.

NOTE: Inspection Plus software must be installed on the machine controller prior to using the EasyCycle software.

Machine (Controller)	Part number	Approximate memory required (KB)
Mazak machining centres (Fusion 640M, Smooth and Matrix)	A-4013-0273	11.0
Mazak Integrex machines eH, eV, i and j-series (Fusion 640M and Matrix)	A-4013-0277	14.5

Quote part number when ordering.

Contact tool setting software for lathes

Machine (Controller)	Part number	Approximate memory required (KB)
Fanuc Macro B (B,C,F)	A-4012-0528 [1]	6.1

Quote part number when ordering.

Note:

[1] Manual, or manual with automatic option.

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Part no.: H-2000-2298-25-A
Issued: 05.2024