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NC3 non-contact tool setting system

NC3 laser based non-contact tool setting system

Tool measurement and broken tool detection anywhere along the beam

System components
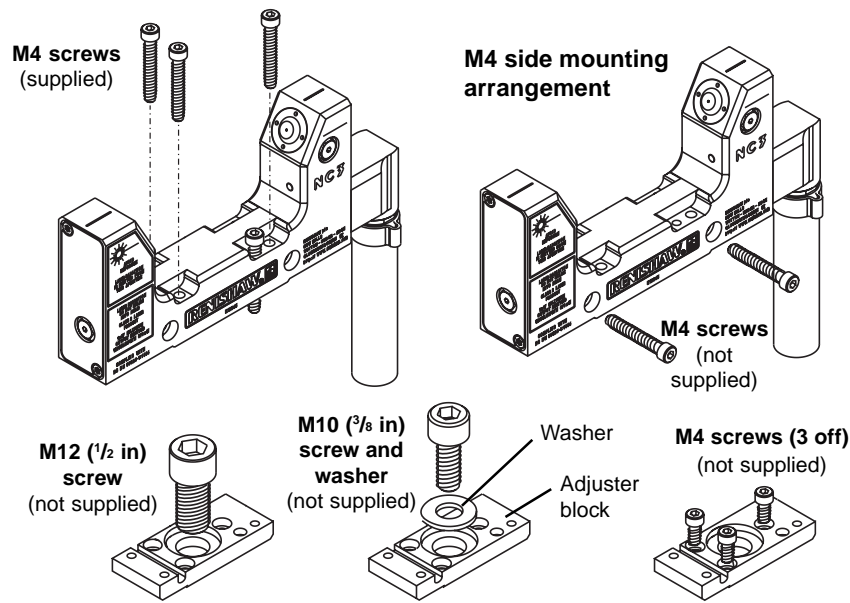
- **NC3 tool setting system**
  The NC3 is a compact 2 axis non-contact tool setting system (±X or ±Y and ±Z) which is hard-wired to the NCi-4 interface.

- **NCi-4**
  The NCi-4 processes signals from the NC3 and converts them into a voltage-free solid state relay (SSR) output for transmission to the CNC machine control. The NCi-4 also features a drip rejection mode which allows for any drops of coolant hitting the laser beam to be ignored, taking in only tool measurements. For further details refer to data sheet H-2000-2232.

- **PSU3 power supply**
  Used when 12 V - 24 V supply is not available from the machine.

- **Software for tool setting/broken tool detection**
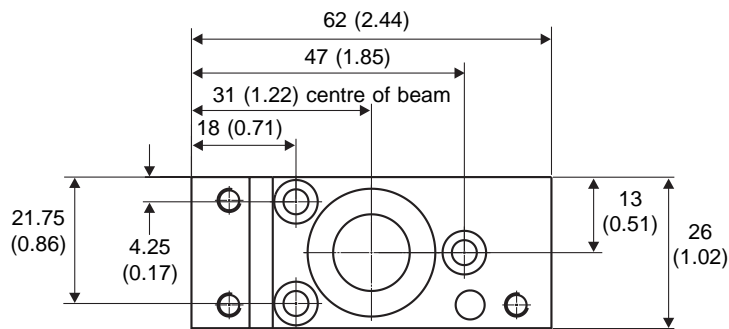 The NC3 is suitable for use with Renishaw non-contact tool setting cycles.

System features

- Compact design 135 mm x 26 mm x 77 mm.

- Repeatability ±0.15 μm (±6 μin) 2σ.

- Measurement of tools of Ø0.2 mm and larger. Broken tool detection of tools as small as Ø0.1 mm.

- Sealed to IPX8 with air on and designed for machine tool environment.

- Measurement anywhere along the beam.

- Proven MicroHole™ technology - no moving parts.

- Single conduit exit from product - electrical and pneumatic cables enter via single conduit.

- Measure tool length and diameter at normal spindle cutting speeds.

- Drip rejection mode - rejects random drops of coolant falling through the beam.

- Simplifies integration of dual probe systems.

Mounting

M4 screws
(supplied)

**M4 side mounting
arrangement**

M4 screws
(not
supplied)

**M12 (¹/₂ in)
screw**
(not supplied)

**M10 (³/₈ in)
screw and
washer**
(not supplied)

Washer

Adjuster
block

M4 screws (3 off)
(not supplied)

Mounting dimensions

62 (2.44)

47 (1.85)

31 (1.22) centre of beam

18 (0.71)

21.75
(0.86)

4.25
(0.17)

13
(0.51)

26
(1.02)

Technical data

26
(1.02)

13
(0.51)

135 (5.32)

35 (1.38)

29 (1.14)

80 (3.15)

Status LED for
indication only

34
(1.34)

25
(0.98)

77
(3.03)

67.5
(2.66)

59.5
(2.34)

9 (0.35)

±2°

35.5
(1.40)

32.5
(1.28)

Ø17
(Ø0.67)
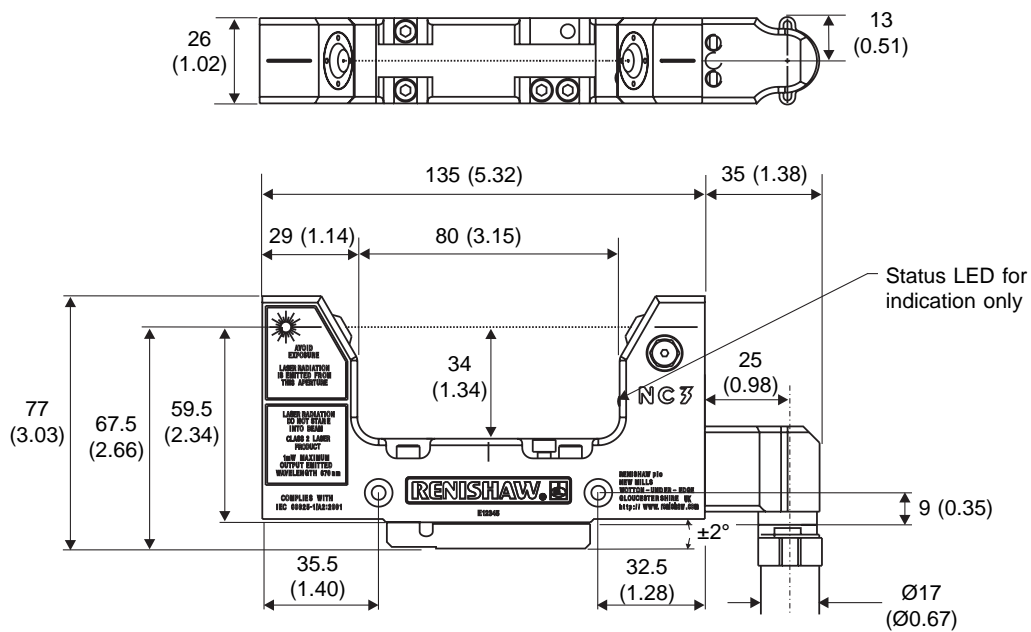
Dimensions
in mm (in)

Specification

Supply protection	Resettable fuses, by removing power and fault condition
Application	High precision / high speed non-contact tool setting and tool breakage detection
Laser type	Visible red
	Conforms to American (21 CFR 1040.10) and International (IEC 60825-1:1993 + A1:1997 + A2:2001) laser safety standards
Laser beam alignment	Adjuster pack - supplied, options available
Length	135 mm (5.32 in) unit only, 173 mm (6.82 in) overall including conduit adapter
Temperature limits	Operating 5 °C to 50 °C Storage -10 °C to 70 °C
Amplification adjustment	Factory pre-set
Moisture protection class	IPX8 with air on
Repeatability of trigger points	±0.15 μm (6 μin) 2σ
Tool diameter measurement	0.2 mm (0.008 in) - 80 mm (3.15 in), 101.6 mm (4.00 in) off centre
Tool breakage detection	0.1 mm (0.0039 in) or larger
Electrical connection	Hard-wired
Power supply requirement	120 mA @ 12 V, 70 mA @ 24 V
Output signals	Two solid state relay (SSR) configurable outputs - Normally open or Normally closed (selectable via switch), one of which can be configured pulsed or level.
Air protection system	Ø3 mm air pipe, 1.5 bar (21.75 psi) min., 6 bar (87 psi) max., 2 bar (29 psi) recommended. ISO 8573-1: Class 5 particulates and moisture free to the air regulator unit
MicroHole™ size	0.5 mm (0.0197 in)
Power-up time	< 0.5 seconds
Laser diode life	> 3 years
Switch on/off cycles	> 1 million

Laser radiation
Do not stare into beam

1 mW maximum output
emitted wavelength 670 nm

Class 2 laser product

Parts list - Please quote the part number when ordering equipment

Type	Part number	Description
NC3 unit	A-4179-1500	NC3, laser warning sign and installation guide
NC3 kit	A-4179 -1100	NC3, NCi-4, air filter kit, conduit, tool kit, laser warning sign and installation guide
NCi-4 interface	A-5259-1000	NCi-4 interface with DIN-rail mounting, 2 terminal blocks
NC3 air assembly kit	A-4179-1600	Air regulator/filter, Ø3 mm to Ø4 mm air fitting, Ø4 mm x 25 m air pipe and Ø3 mm x 5 m air pipe
NC3 air filter service kit	P-FI01-S002	Service kit for air regulator, parts for both filter bowls
NC3 angled adjuster block	A-4179-1501	45 degree mounting bracket
Software		See data sheet part number H-2000-2289 probe software for machine tools
PSU3		PSU3 power supply unit (see data sheet part number H-2000-2200)

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