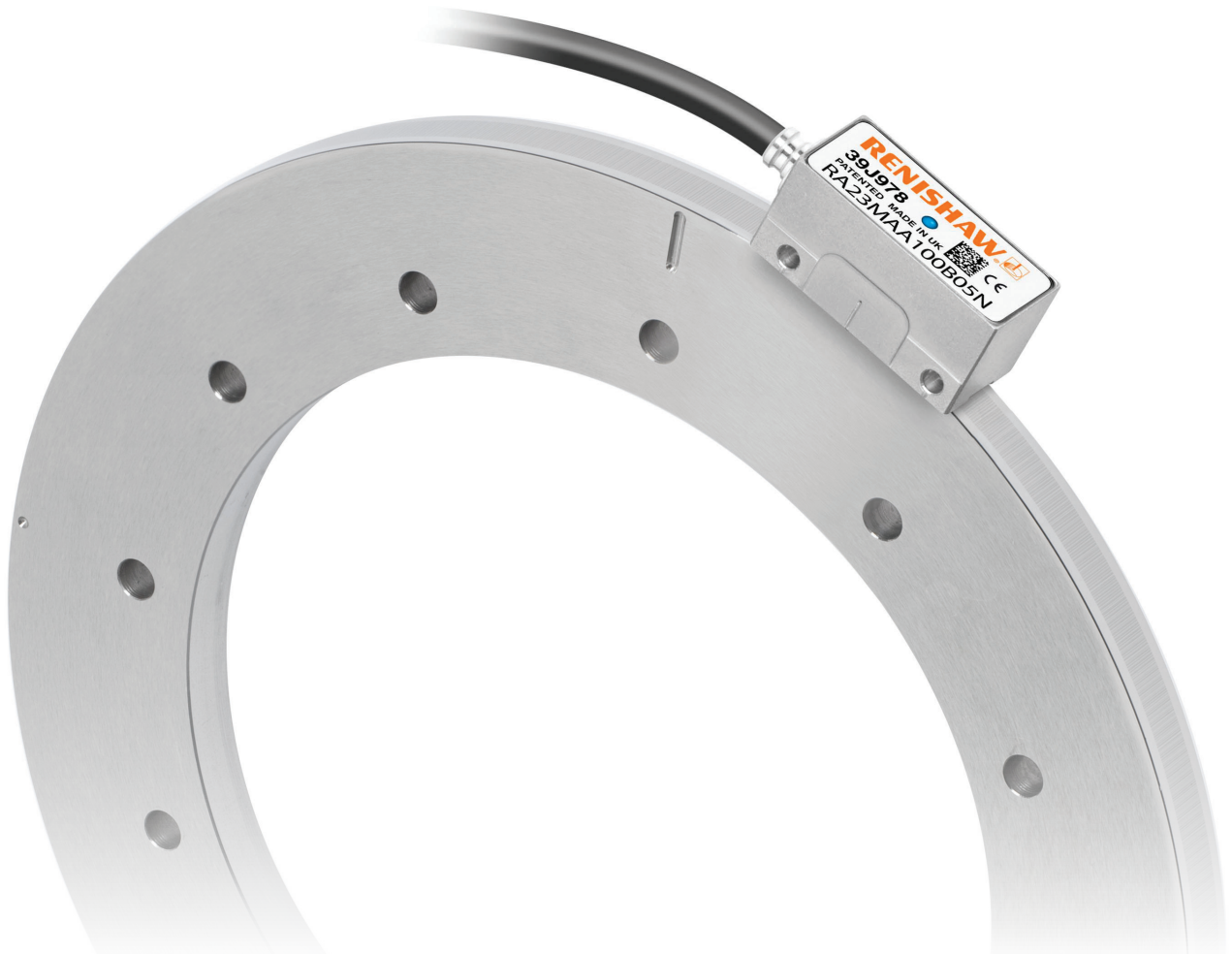


REXA ultra-high accuracy absolute angle encoder



With zero coupling losses and exceptional repeatability, the REXA ultra-high accuracy angle encoder achieves better than ± 1 arc second total installed accuracy.

Like the RESA encoder, the REXA is a stainless steel ring with the scale graduations marked axially onto the periphery, but with a number of differences to improve upon RESA's already impressive accuracy.

REXA has a thicker cross-section to ensure that the only significant installation error is eccentricity. Eccentricity is easily removed by using 2 readheads, and combining the signals inside the host controller.

The only errors remaining are graduation errors and readhead SDE, both of which are so small they are often negligible.

As a non-contact encoder, REXA offers dynamic performance advantages, eliminating coupling losses, oscillation, shaft torsion and other hysteresis errors that plague enclosed encoders.

The REXA system operates at temperatures up to $+80$ °C and speeds to 8 500 rev/min.

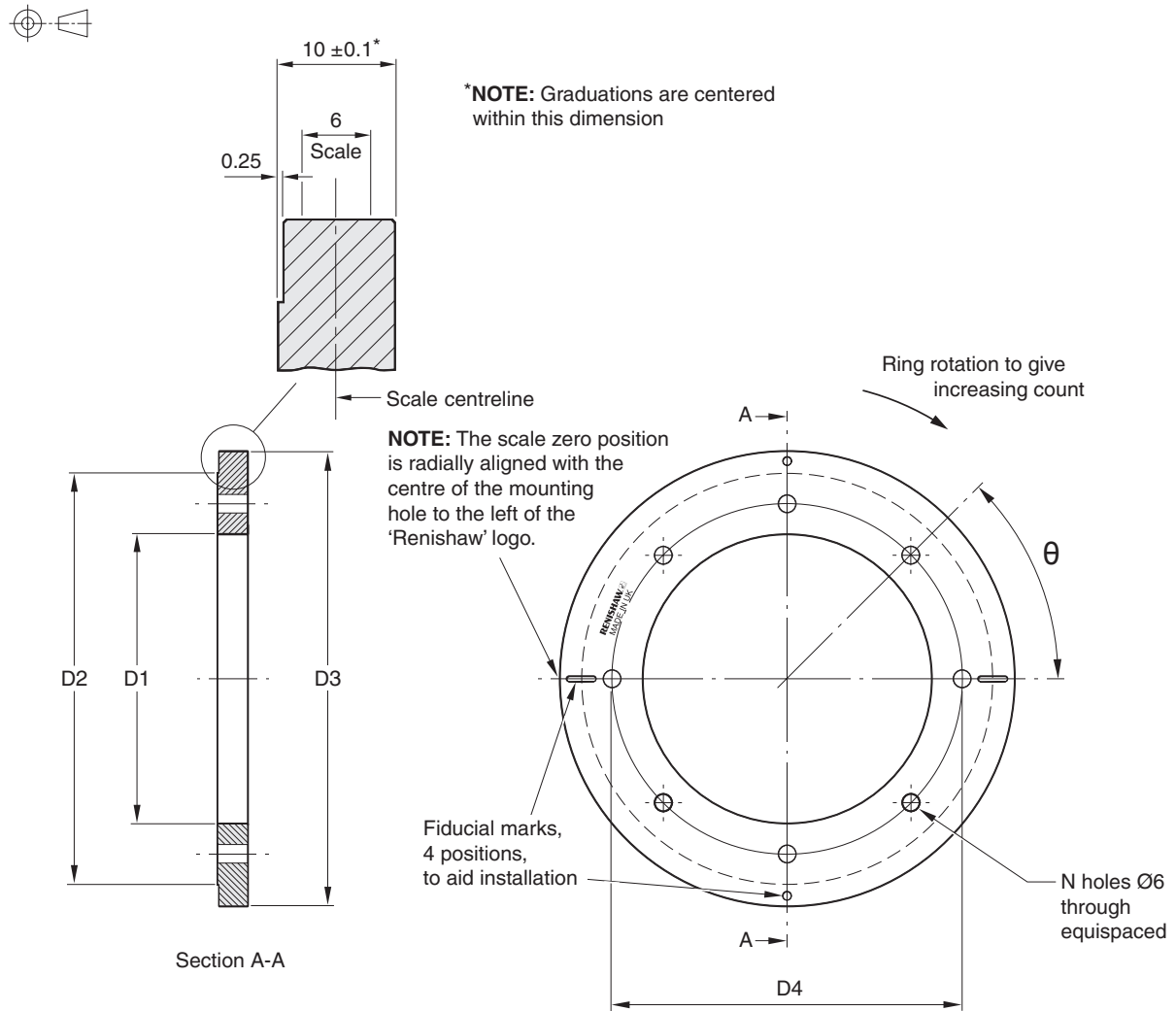
REXA total installed accuracy grades:

REXA diameter	Total installed accuracy (with 2 readheads)
≥ 100 mm	± 1 arc second
75 mm	± 1.5 arc second
≤ 57 mm	± 2 arc second

- Use with two RESOLUTE™ readheads to give ultra-high accuracy
- Installed accuracy to ± 1 arc second with dual readheads
- Sub-divisional error to ± 0.04 arc second
- Resolutions to 0.00030 arc second
- Repeatability to 0.01 arc second
- Wide range of standard sizes from 52 mm to 417 mm
- Large internal diameter for ease of integration
- Flange mounted with easy 4-point adjustment method

Installation drawing

Dimensions and tolerances in mm

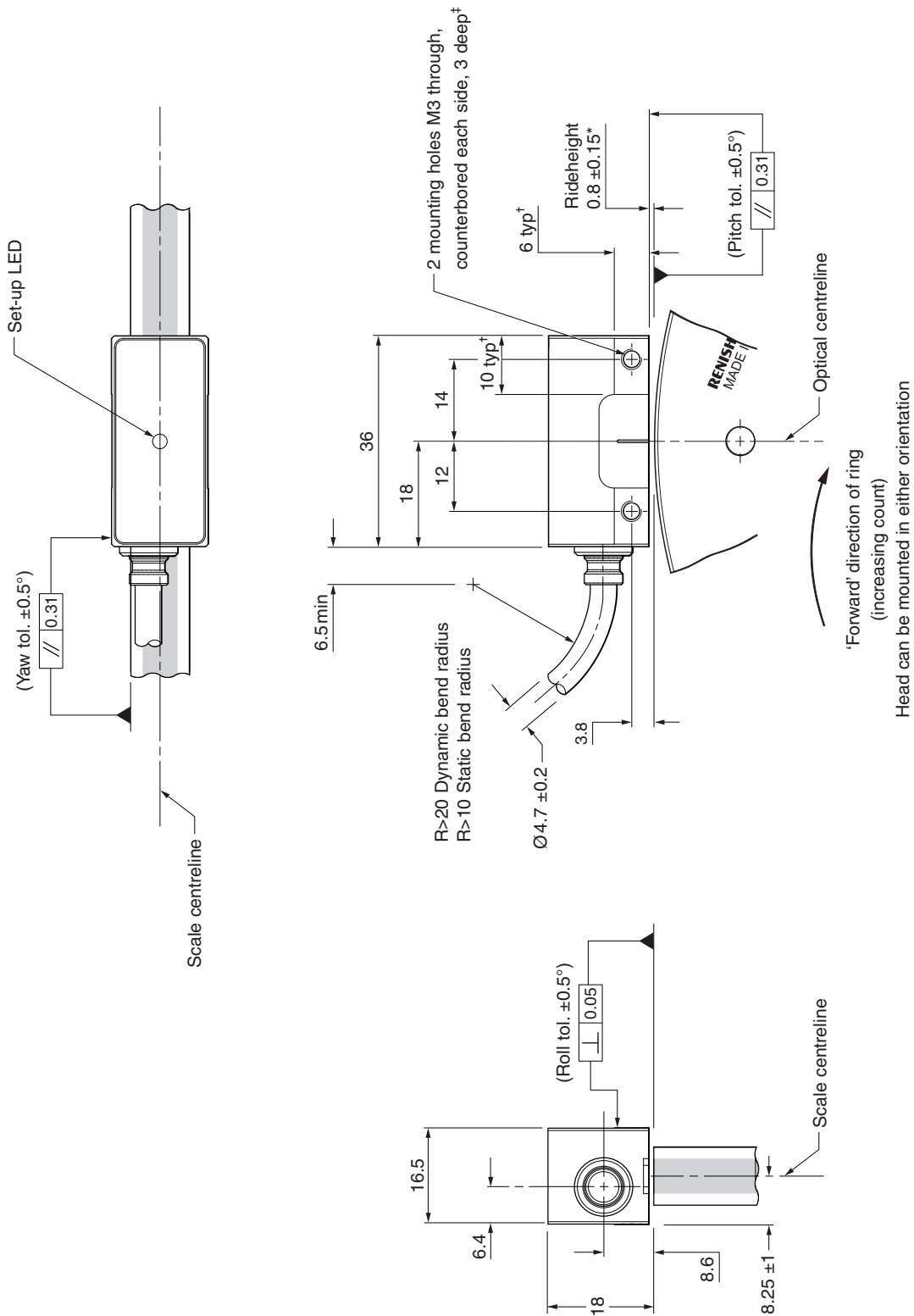


Nominal external diameter (mm)	Dimensions			Mounting Holes		
	D1	D2	D3	N	D4	θ
52 [†]	26	50	52.1 – 52.2	4	38	90°
57 [†]	26	50	57.25 – 57.35	4	38	90°
75	40.5	64.5	75.3 – 75.4	8	52.5	45°
100	57.5	97.5	100.2 – 100.3	8	77.5	45°
103	57.5	97.5	103.0 – 103.2	8	77.5	45°
104	57.5	97.5	104.2 – 104.4	8	77.5	45°
115	68	108	114.5 – 114.7	8	88	45°
150	96	136	150.2 – 150.4	8	116	45°
183	122.5	162.5	183.2 – 183.4	12	142.5	30°
200	136	176	200.2 – 200.4	12	156	30°
206	140.5	180.5	206.1 – 206.5	12	160.5	30°
209	140.5	180.5	208.4 – 208.8	12	160.5	30°
229	160.5	200.5	229.0 – 229.4	12	180.5	30°
255	180.5	220.5	254.4 – 254.8	12	200.5	30°
300	216	256	300.2 – 300.4	12	236	30°
350	256	296	350.2 – 350.4	16	276	22.5°
417	305	345	417.0 – 417.4	16	325	22.5°

[†]52 mm and 57 mm rings have dimple fiducial features and no slots.

RESOLUTE installation drawing

Dimensions and tolerances in mm

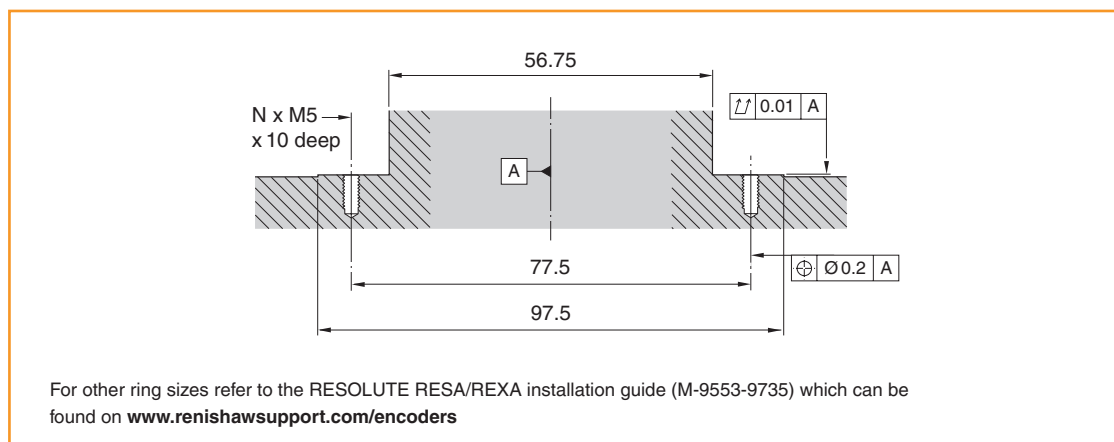


*0.1 on 52 mm rings. †Extent of mounting faces. ‡Recommended thread engagement 5 min (8 including counterbore). Recommended tightening torque 0.5 to 1.0 Nm. For more information on installation and mounting options please refer to the RESOLUTE RESA/REXA Installation guide (M-9553-9735). This can be downloaded from our website www.renishaw.com/encoder or contact your local representative.

Mounting method

(Important: flange mount only. Do **NOT** interference fit)

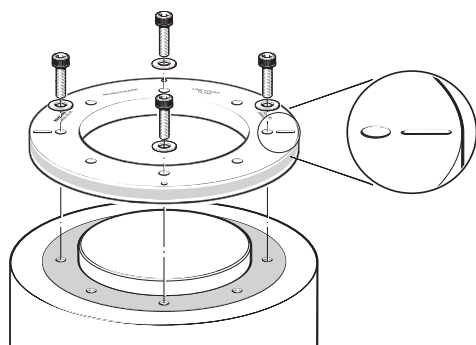
NOTE: If using REXA with a RESOLUTE ETR, please contact your local Renishaw representative for more information.



Example of mounting surface for 104 mm REXA

Installation technique

(Please refer to the RESA/REXA installation guide (M-9553-9735) for full details).



REXA rings are made with 4 fiducial points engraved onto the top surface, which simplify alignment.

Using a suitable dial test indicator, positioned so that the stylus ball touches directly onto the scale surface, the ring only needs to be adjusted for run-out at the 4 fiducial points.

Operating specifications

Material	303/304 stainless steel	
Coefficient of expansion (at 20 °C)	15.5 ±0.5 µm/m/°C	
Temperature (system)	Storage	Standard RESOLUTE: -20 °C to +80 °C ETR: -40 °C to +80 °C UHV: 0 °C to +75 °C
	(readhead) Operating	Standard RESOLUTE: 0 °C to +80 °C ETR: -40 °C to +80 °C UHV: 0 °C to +75 °C
	(interface) Operating	Siemens DRIVE-CLiQ: 0 °C to +55 °C

Ring mass and inertia

Ring diameter (mm)	52	57	75	100	103	104	115	150	183
Mass (kg)	0.12	0.16	0.24	0.41	0.45	0.47	0.53	0.84	1.16
Inertia (kg-cm ²)	0.52	0.79	2.22	6.94	7.89	8.31	11.7	33.3	70.4

Ring diameter (mm)	200	206	209	229	255	300	350	417
Mass (kg)	1.35	1.43	1.49	1.68	2.02	2.73	3.59	5.09
Inertia (kg-cm ²)	99	111	118	164	246	468	845	1 700

Resolution

RESOLUTE is available with a variety of resolutions, to meet the needs of a wide range of applications. The choice of resolutions depends on the serial protocol being used, but there are no limitations due to ring size, eg **FANUC** 27 bit resolution is available on all ring sizes.

BiSS RESOLUTE resolution options:

18 bit (262 144 counts per revolution, \approx 4.94 arc second)

26 bit (67 108 864 counts per revolution, \approx 0.019 arc second)

32 bit (4 294 967 296 counts per revolution, \approx 0.00030 arc second)

Note that 32 bit resolution is below the noise floor of the RESOLUTE encoder.

FANUC and **Mitsubishi RESOLUTE** resolution options:

23 bit (8 388 608 counts per revolution, \approx 0.15 arc second)

27 bit (134 217 728 counts per revolution, \approx 0.0097 arc second)

Panasonic RESOLUTE resolution option:

23 bit (8 388 608 counts per revolution, \approx 0.15 arc second)

Yaskawa RESOLUTE resolution option:

24 bit (16 777 216 counts per revolution, \approx 0.077 arc second)

Siemens DRIVE-CLiQ RESOLUTE resolution options:

26 bit (67 108 864 counts per revolution, \approx 0.019 arc second)

29 bit (536 870 912 counts per revolution, \approx 0.0024 arc second)

For resolution options on other protocols, please contact Renishaw.

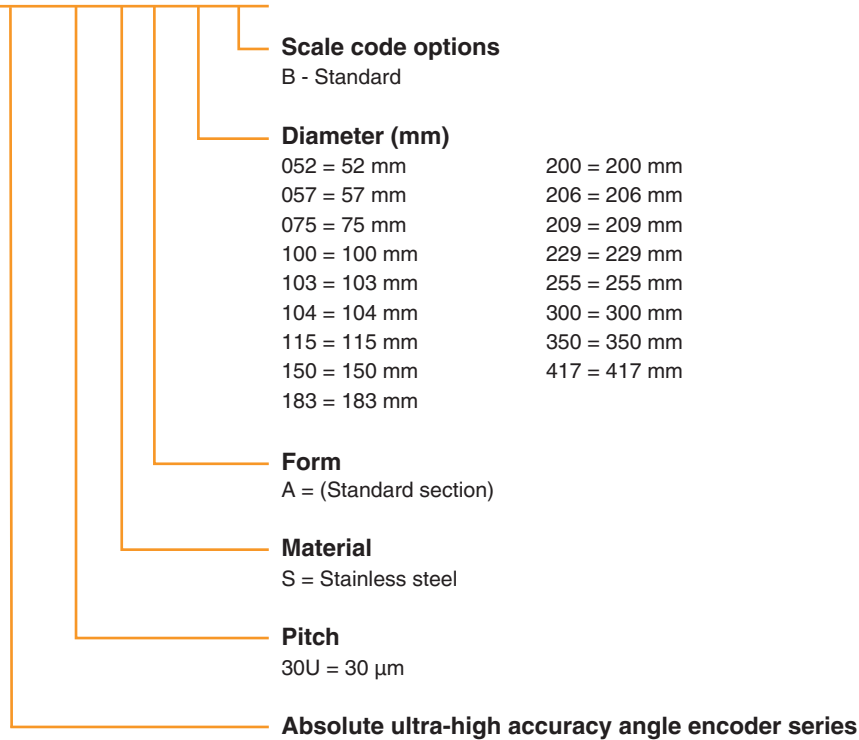
Speed

REXA diameter (mm)	Maximum speed (rev/min)
52	8 500
57	7 300
75	7 100
100	4 700
103	4 400
104	4 400
115	3 800
150	2 700
183	2 500
200	2 200
206	2 100
209	2 000
229	1 800
255	1 600
300	1 200
350	1 200
417	900

NOTE: Maximum speed for REXA rings is limited by mechanical effects. The readhead is capable of reading much higher speeds. For more information and advice on using angle encoders at high speed, please contact Renishaw.

REXA absolute ultra high accuracy angle encoder part numbers

REXA 30U S A 150 B



REXA compatible readhead

REXA



RESOLUTE



Installation guide M-9553-9735
Data sheet *BiSS* L-9517-9448
FANUC L-9517-9442
Mitsubishi L-9517-9454
Siemens DRIVE-CLiQ L-9517-9524
Yaskawa L-9517-9436
Panasonic L-9517-9460

RESOLUTE UHV



Data sheet L-9517-9530

RESOLUTE ETR



Data sheet L-9517-9420

For worldwide contact details, please visit our main website at www.renishaw.com/contact

RENISHAW HAS MADE CONSIDERABLE EFFORTS TO ENSURE THE CONTENT OF THIS DOCUMENT IS CORRECT AT THE DATE OF PUBLICATION BUT MAKES NO WARRANTIES OR REPRESENTATIONS REGARDING THE CONTENT. RENISHAW EXCLUDES LIABILITY, HOWSOEVER ARISING, FOR ANY INACCURACIES IN THIS DOCUMENT.

RENISHAW and the probe emblem used in the RENISHAW logo are registered trademarks of Renishaw plc in the UK and other countries. apply innovation is a trademark of Renishaw plc. DRIVE-CLiQ is a registered trademark of Siemens. *BiSS*® is a registered trademark of iC-Haus GmbH.

© 2009-2018 Renishaw plc All rights reserved Issued 0818



L - 9517 - 9405 - 03