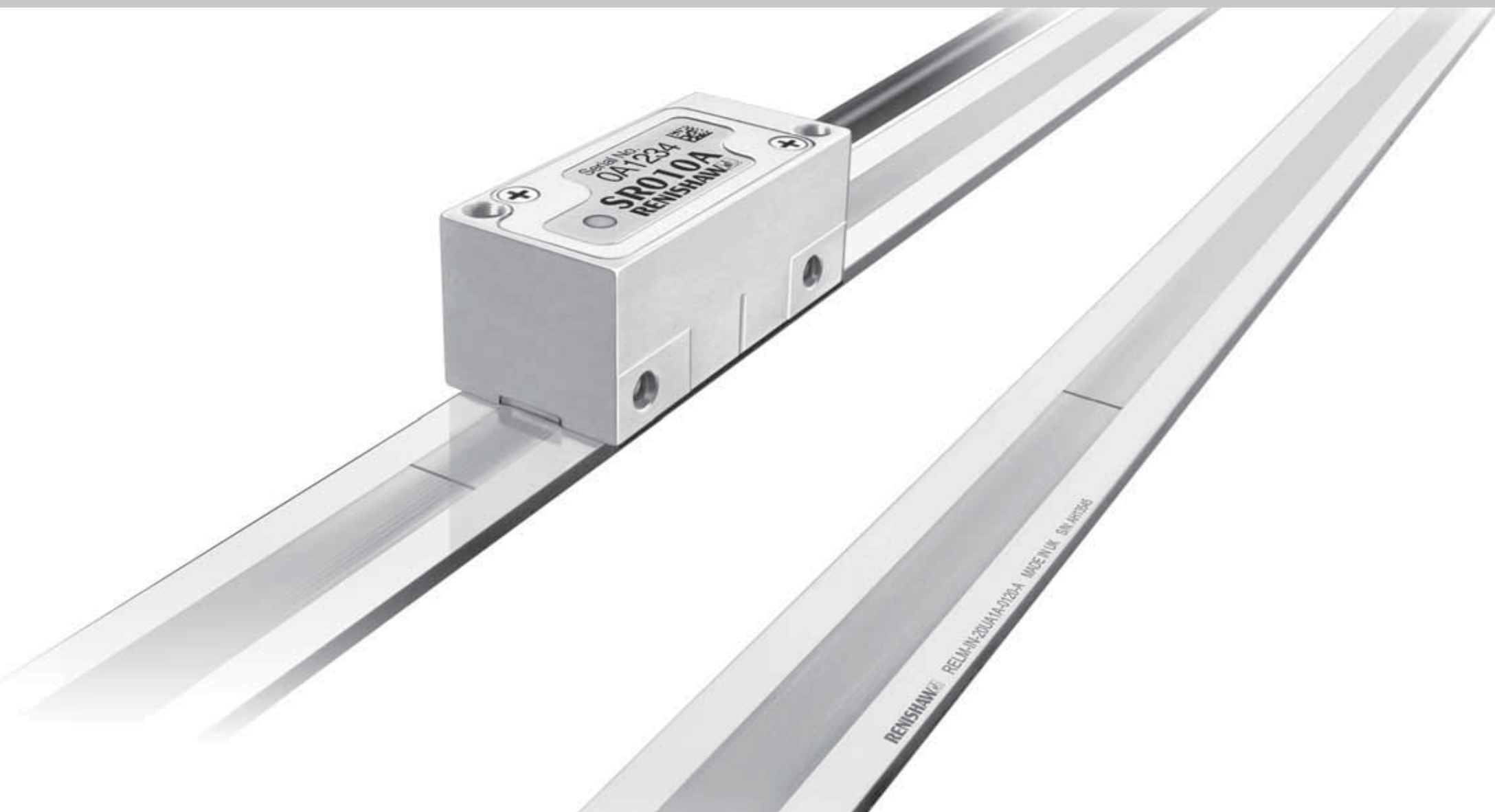


SIGNUM™ RELM high accuracy linear encoder



Patents

Features of Renishaw's RELM linear encoder systems and similar products are the subjects of the following patents and patent applications:

EP 0207121	US 4959542	EP 0514081	JP 3,202,316	US 5,241,173
EP 0543513	JP 248,895/1993	US 5,302,820	EP 0748436	US 5,861,953
EP 1147377	JP 2003-512,611	US 6,588,333 B1	WO 03/061891	CN1620353A
EP 1469969	JP 2005-515,077	US 2005-0045586		

Further patent applications pending.

Further information

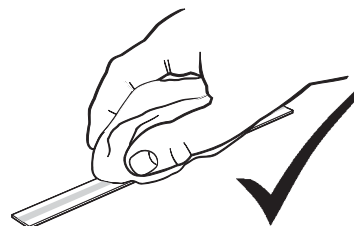
For further information relating to the installation of RELM linear encoder system, see also the RELM Data sheet (L-9517-9219) and the **signum**™ system Data sheet and Installation guide (L-9517-9155 and M-9572-0057). These can be downloaded from our website www.renishaw.com and are also available from your local representative.

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Storage and handling

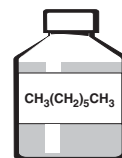


The RELM is a non-contact optical encoder that provides good immunity against contaminants such as dust, fingerprints and light oils.

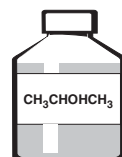
However, in harsh environments such as machine tool applications, protection should be provided to prevent ingress of coolant or oil.

Scale and readhead

N-heptane

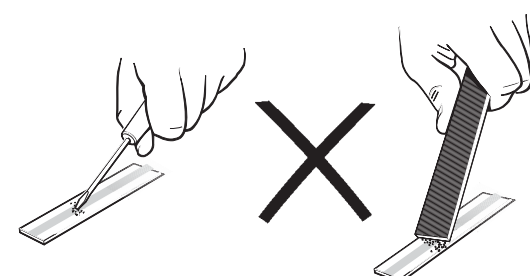
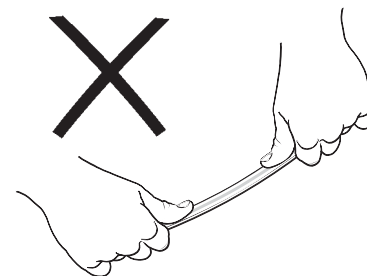
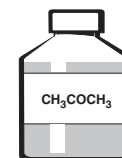


Propan-2-ol

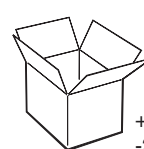


Scale only (avoid contact with readhead)

Acetone



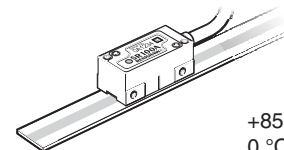
Scale only



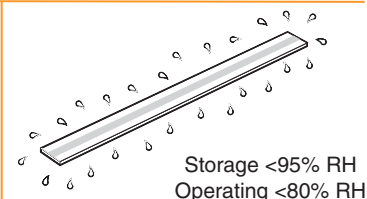
+70 °C
-20 °C



Scale and readhead



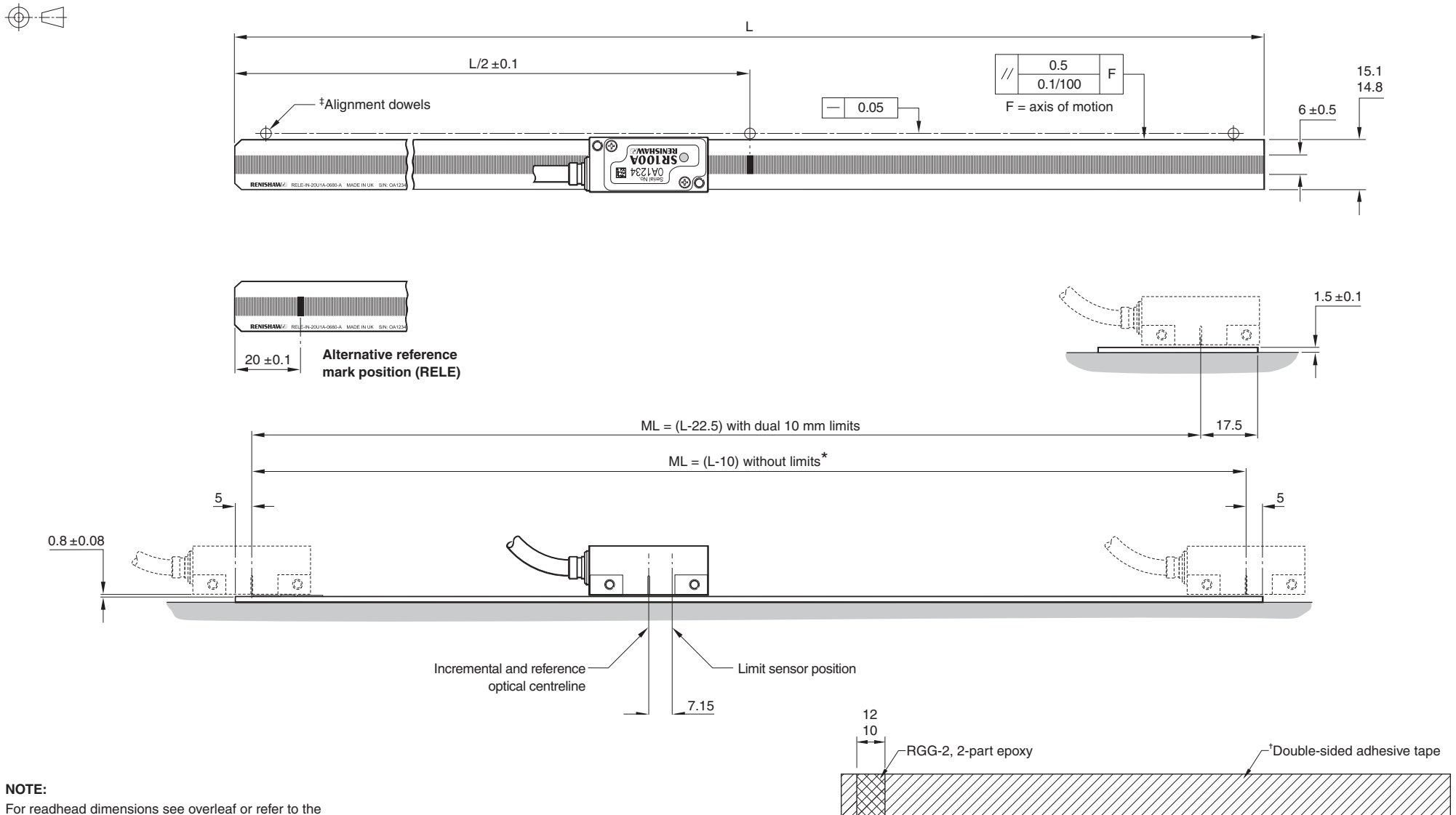
+85 °C
0 °C



Storage <95% RH
Operating <80% RH

Adhesive mounting installation

Dimensions and tolerances in mm



NOTE:

For readhead dimensions see overleaf or refer to the **SIGNUM**™ Installation guide (M-9572-0057)

Adhesive mounted scale should not be reused after installation

See overleaf for limit alignment and effect of limits on measuring length

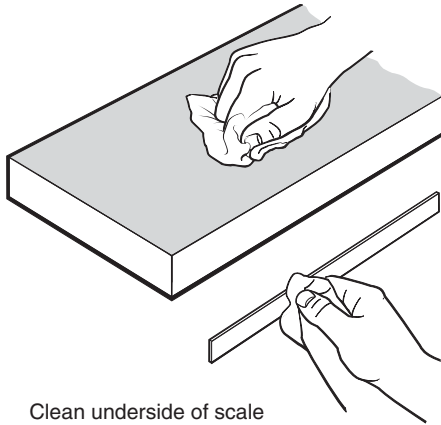
*Si interfaces should be purchased with limits deactivated

*Double-sided adhesive tape is included with all scale lengths

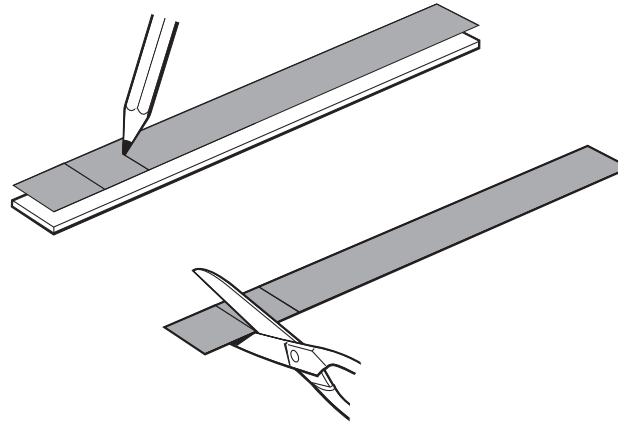
*When scale is to be mounted vertically, position the dowels so that the datum edge is supported

Adhesive mounting installation

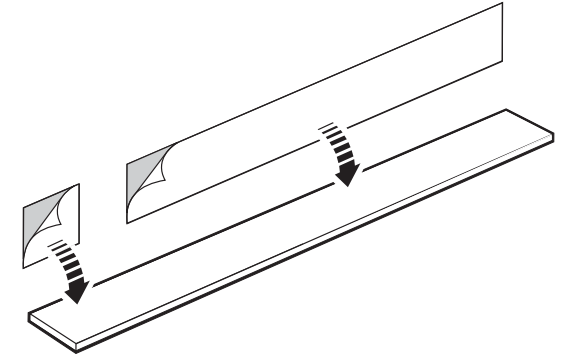
- 1 Clean substrate



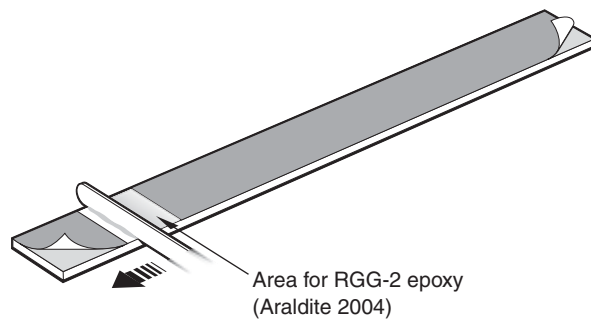
- 2 Mark area for epoxy on adhesive tape



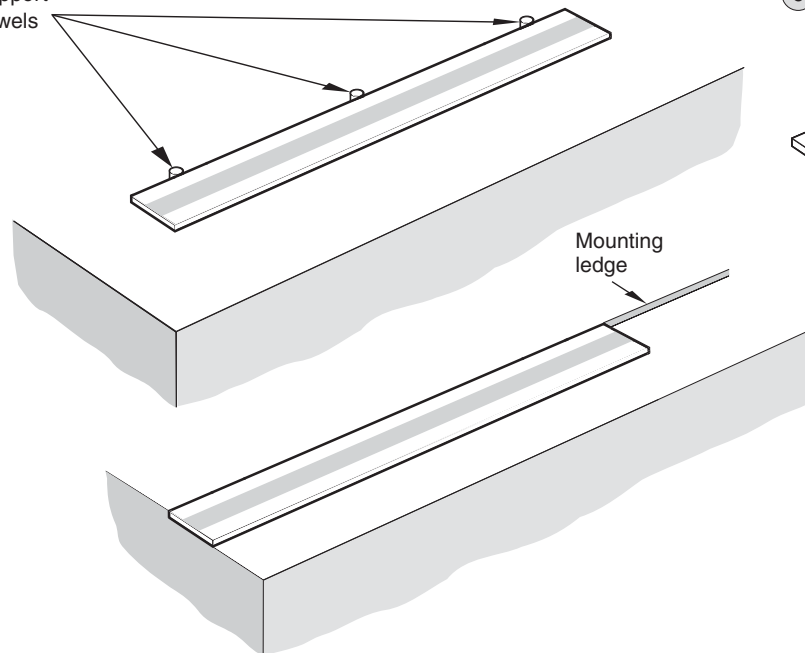
- 3 Remove backing liner and stick to underside of scale.



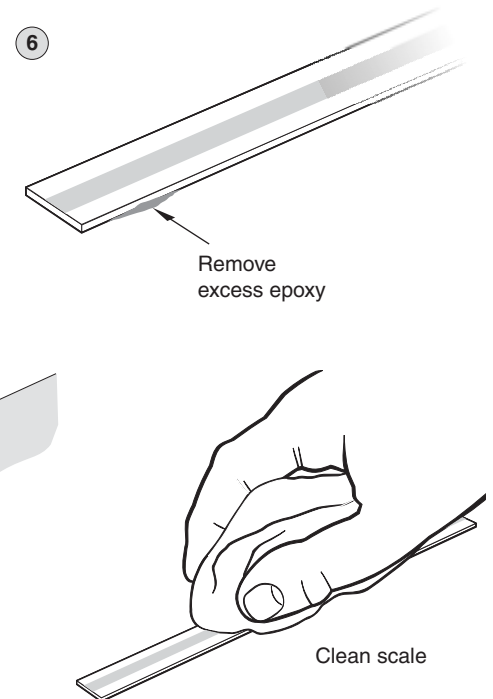
- 4 Apply epoxy then remove backing liner and stick to substrate.



- 5 Support dowels

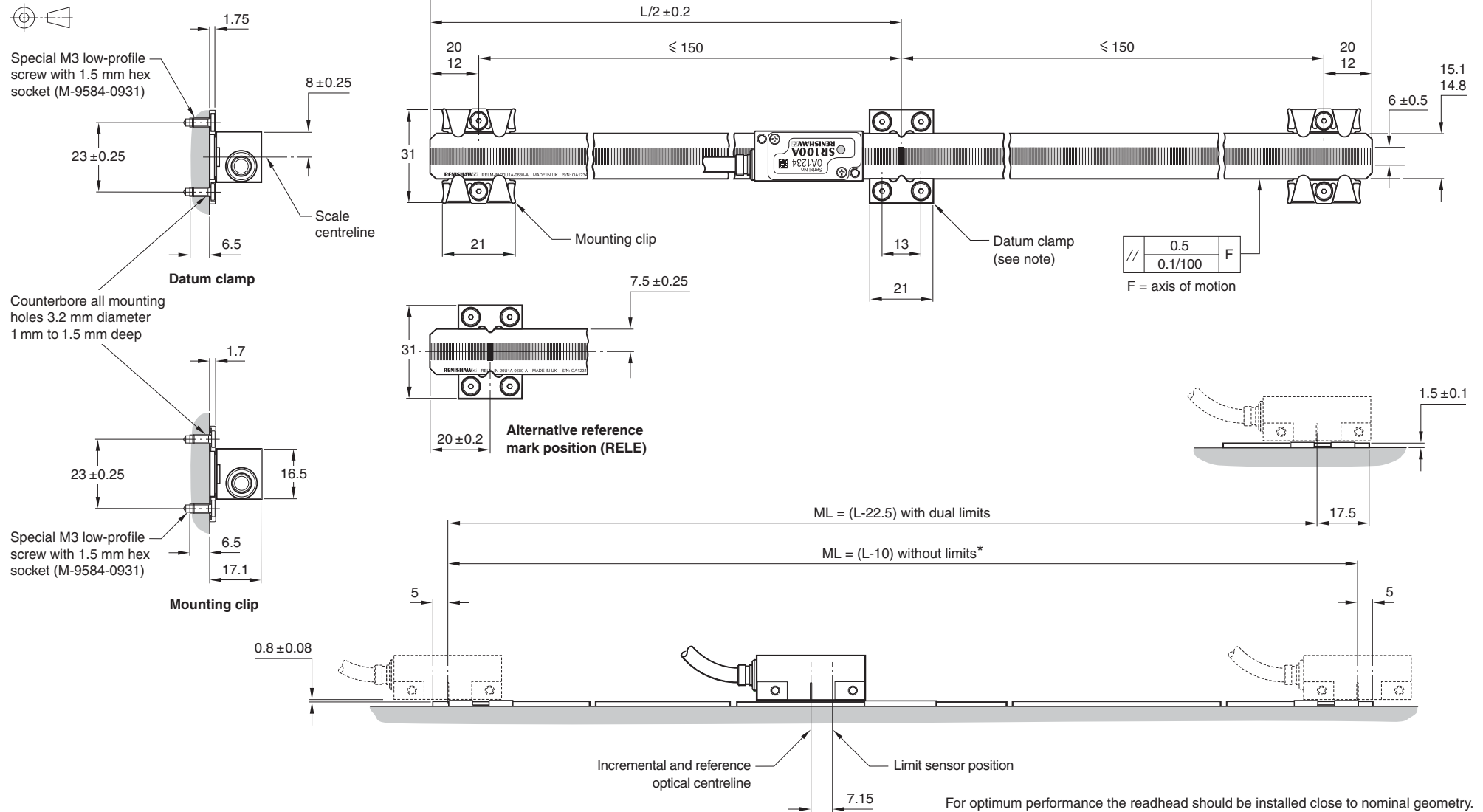


- 6



Clip/clamp mounting installation

Dimensions and tolerances in mm



Datum clamp usually coincident with **IN-TRAC™** reference mark

See overleaf for limit alignment and effect of limits on measuring length

*Si interfaces should be purchased with limits deactivated

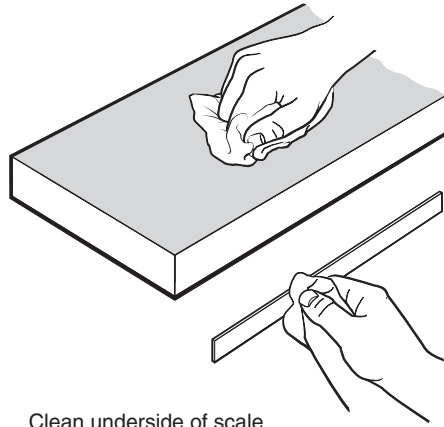
For optimum performance the readhead should be installed close to nominal geometry. Care should be taken to ensure sufficient clearance between the readhead/mounting bracket and clips/datum clamp.

Only special M-9584-0931 low-profile screws should be used. Screws are provided with all clips/datum clamps and spares can be supplied if required.

NOTE: Alternative, larger, clips and clamps are available for use on substrates incorporating sub-flush threaded inserts, e.g. granite.

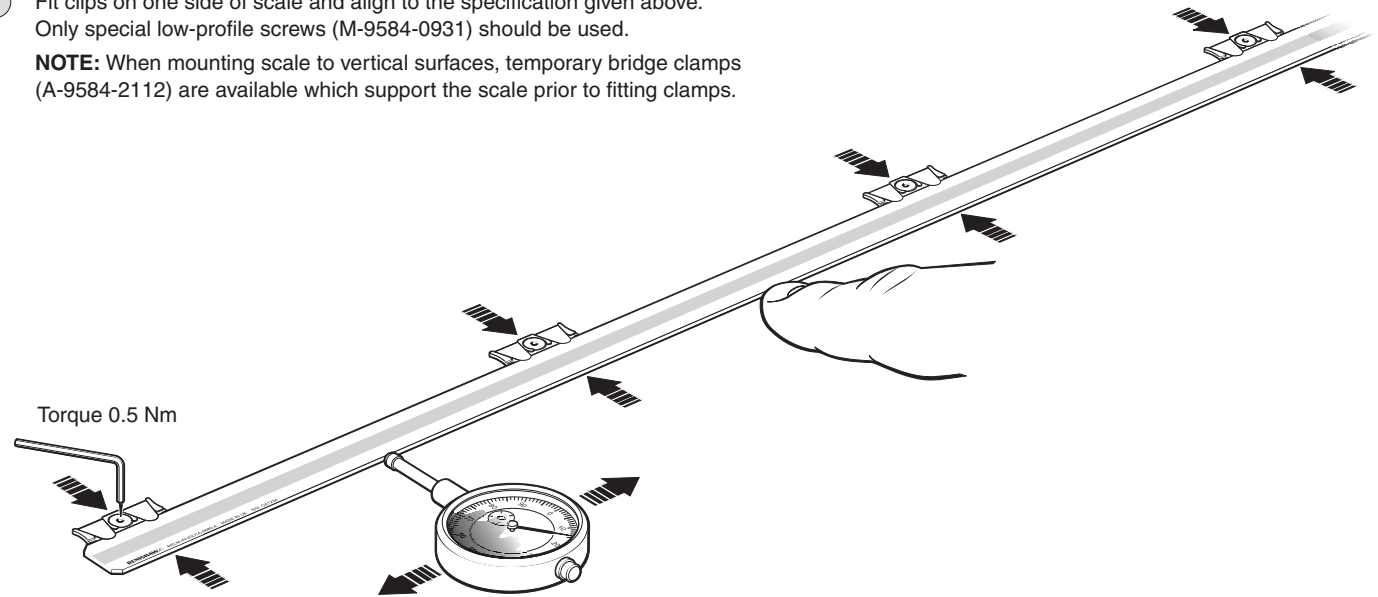
Clip/clamp mounting installation

- ① Clean substrate

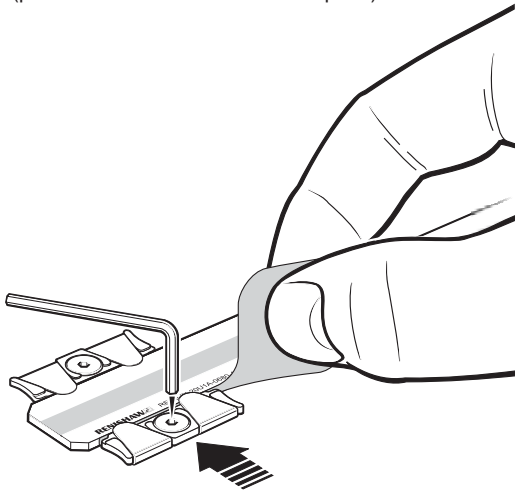


- ② Fit clips on one side of scale and align to the specification given above. Only special low-profile screws (M-9584-0931) should be used.

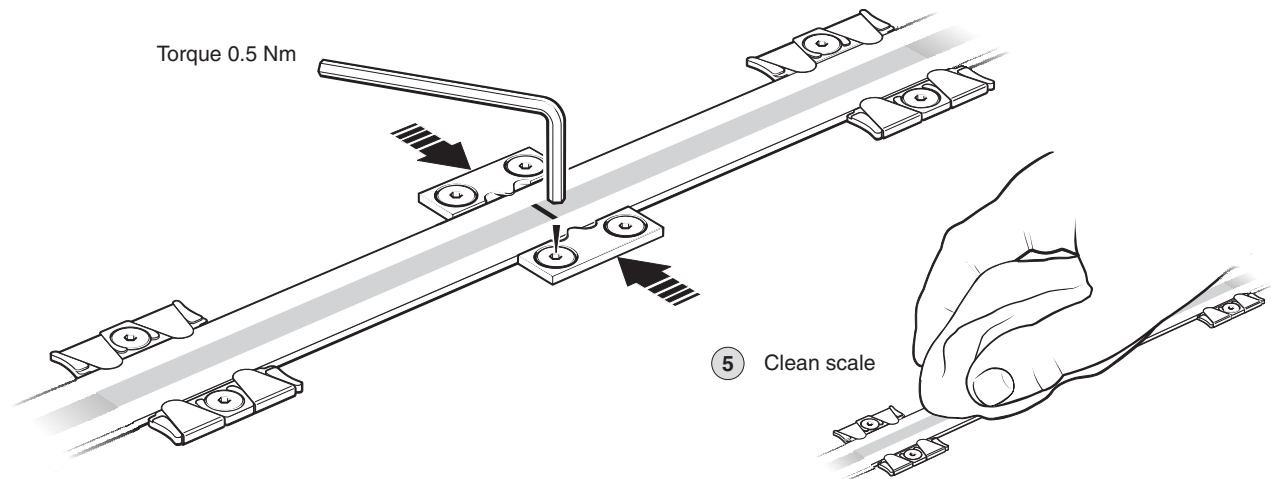
NOTE: When mounting scale to vertical surfaces, temporary bridge clamps (A-9584-2112) are available which support the scale prior to fitting clamps.



- ③ Fit remaining clips using clip setting shim M-9584-0928 (provided with A-9584-2050 clamp set).



- ④ Place datum clamps against scale (usually adjacent to reference mark) and secure using special M3 low-profile screws (M-9584-0931).



Reference mark

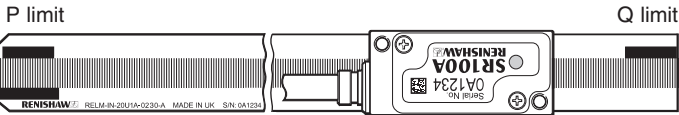
A reference mark is located either at the centre of the scale (RELM) or 20 mm from one end (RELE).
For details on phasing the reference mark see the **SIGNUM** SR, Si encoder system installation guide (M-9572-0057).

On-scale limits

Self-adhesive limit markers are available in 10 mm, 20 mm and 50 mm lengths as pre-aligned pairs on backing paper.
The use of limits affects measuring length. See table below for details.

Limit alignment

The limits are aligned on the scale as shown below (standard readhead configuration only).
► The P limit is located at the cable exit side of the readhead and consists of 2 markers, 1 either side of the incremental track. The markers are pre-aligned with the correct offsets on the backing paper.
► The Q limit is located at the opposite end to the cable exit and consists of 1 marker. The marker should be affixed to the opposite edge to the cable exit, as shown in the drawing below.

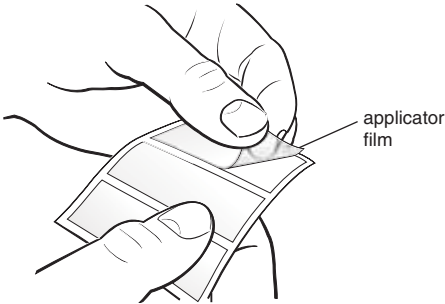


L (mm)	80	130	180	230	280	330	380	430	480	530	580	630	680	780	880	980	1030	1130
Measuring length - no limits ML (mm)	70	120	170	220	270	320	370	420	470	520	570	620	670	770	870	970	1020	1120
Measuring length - dual 10 mm limits ML (mm)	57.5	107.5	157.5	207.5	257.5	307.5	357.5	407.5	457.5	507.5	557.5	607.5	657.5	757.5	857.5	957.5	1007.5	1107.5

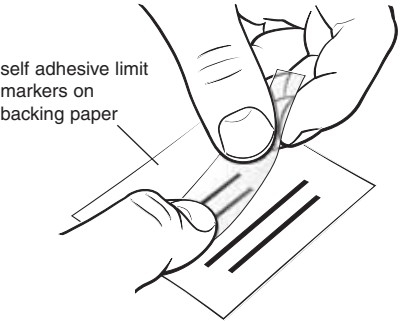
See installation drawings for definition of L and ML

Installing the limits

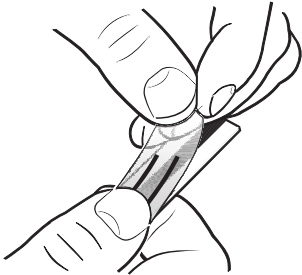
- Ensure the scale is free from dirt and grease by cleaning with a scale wipe (A-9523-4040) or suitable solvent.
- Place the transparent applicator film over the required limit marker and rub firmly until the limit marker adheres to the applicator film. For the P limit, select the pair of markers required.



- Remove the applicator film, complete with the markers, from the backing paper.



- Align the markers on the scale next to the scale track, as shown in the diagram, then rub firmly on the applicator film until the markers adhere to the scale.



- Remove applicator film.



Dimensions and tolerances in mm.



NOTE: Roll tolerance applies over mounting face dimension*

(Roll Tol. $\pm 0.5^\circ$)

0.05

16.5

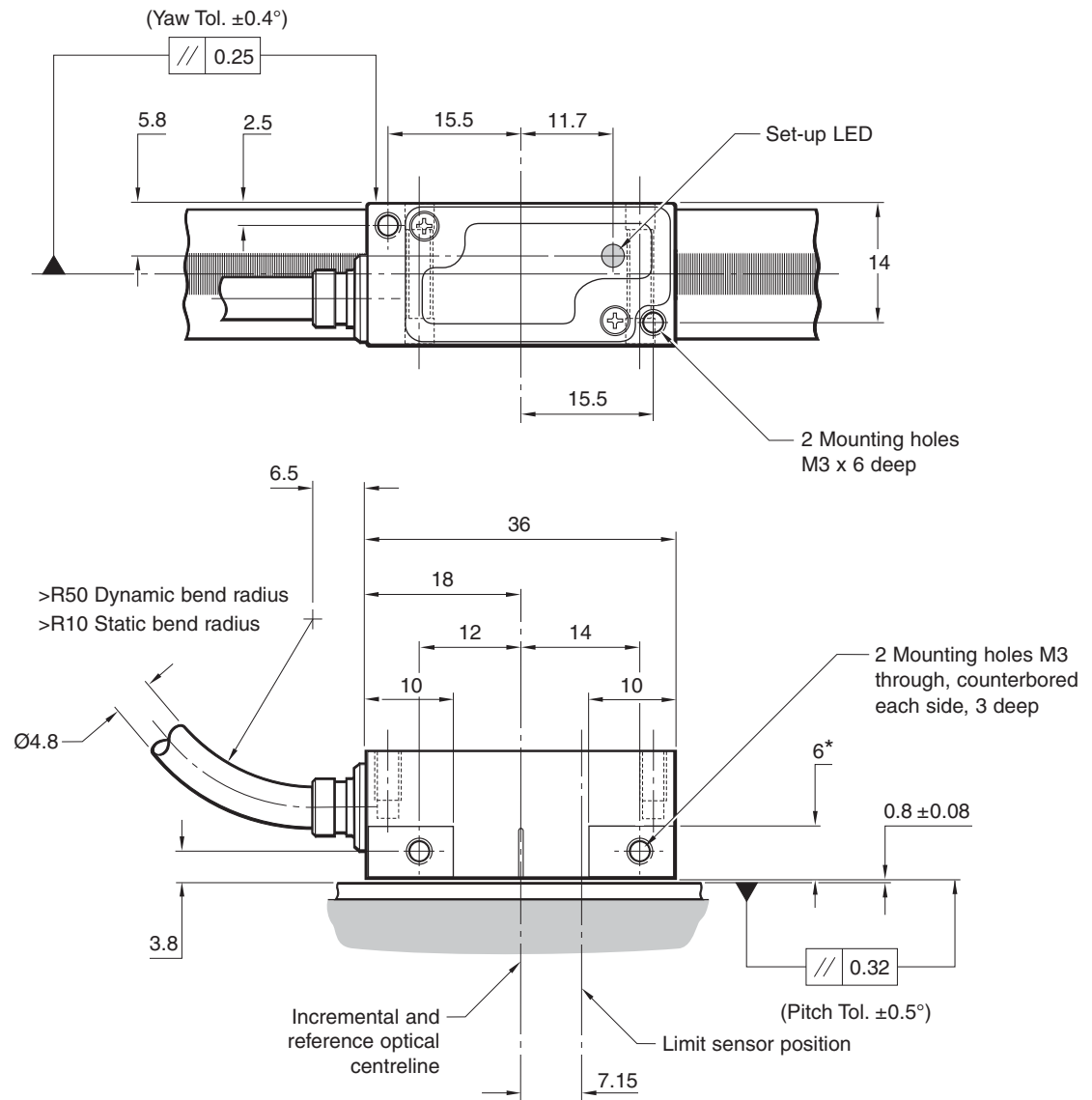
5.5

15.6

8.9

8 ± 0.25

Scale centreline



For **si**GNUM™ readhead installation details refer to **si**GNUM™ SR, Si encoder system installation guide (M-9572-0057).

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