**Data sheet**
L-9517-9918-02-B

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# RKLA30-S absolute linear scale



**RKLA30-S is a robust, 6 mm wide stainless steel encoder tape scale with a thickness of 0.15 mm. This allows the scale, when rigidly fixed to a machine axis, to become 'mastered' to the machine substrate, matching its thermal expansion coefficient and behaviour. Differential movement between the scale and the machine is thus minimised, improving the metrological performance that can be achieved with simple thermal system compensation.**

**Designed for applications that demand high accuracy and absolute positioning, RKLA30-S is read by Renishaw's RESOLUTE™ absolute readhead, which offers resolutions down to 1 nm, 100 m/s maximum speed, ultra low Sub-Divisional Error (SDE) and jitter, resulting in a linear encoder system that outperforms any other encoder in its class.**

RKLA30-S tape scale also combines ±5 µm/m accuracy with the mechanical and chemical ruggedness of stainless steel, easy coiling and cut-to-length convenience.

RKLA30-S is installed onto the axis substrate by a self-adhesive backing tape and a simple application tool makes this a quick, straightforward and inexpensive process. The scale ends are rigidly fixed to the axis substrate by means of epoxy fastened end clamps, eliminating the need to drill holes.

- **Mastered scale matches the coefficient of thermal expansion of the substrate**
- **High accuracy (±5 µm/m) absolute scale. Further improvement possible with error correction.**
- **Narrow 6 mm wide scale suitable for confined spaces**
- **Suitable for partial arc applications**
- **'Cut-to-length' convenience**
- **Lengths up to 21 m**
- **High solvent immunity**
- **Compatible with RESOLUTE absolute readheads**

# RKLA30-S scale specifications

| | | |
|---|---|---|
| **Description** | | Hardened and tempered narrow stainless steel tape scale with self-adhesive backing tape for use with RESOLUTE readheads |
| **Pitch** | | 30 µm |
| **Form (height × width)** | | 0.15 mm × 6 mm (including adhesive) |
| **Accuracy (at 20 °C)** | | ±5 µm/m |
| **Coefficient of thermal expansion (at 20 °C)** | | Matches that of the substrate material when the scale ends are fixed by epoxy mounted end clamps |
| **Temperature** | Storage | –20 °C to +80 °C |
| | Operating | 0 °C to +70 °C |
| | Installation [1] | +10 °C to +35 °C |
| **Humidity** | | 95% relative humidity (non-condensing) to IEC 60068-2-78 |
| **Shock** | Operating | 500 m/s², 11 ms, ½ sine, 3 axes |
| **Vibration** | Operating | Sinusoidal 300 m/s² maximum @ 55 to 2000 Hz, 3 axes |
| **Mass** | | 4.6 g/m |
| **Available lengths** | | 20 mm to 21 m (available in increments of 10 mm) |
| **Measuring length** | | See 'RKLA30-S installation drawing' on page 4 |
| **End fixing** | | Epoxy mounted end clamps [2] |

For further information on linear RKLA30-S installation, refer to the *RESOLUTE RKLA30-S absolute linear encoder system* installation guide (Renishaw part no. M-9553-9400). For information on partial arc applications refer to *RKL scale for partial arc applications* data sheet (Renishaw part no. L-9517-9897). Both of these documents are available from the website at **www.renishaw.com/resolutedownloads**.

[1] To limit maximum tension in the scale $(CTE_{substrate} - CTE_{scale}) \times (T_{use\ extreme} - T_{install}) \leq 550$ µm/m where $CTE_{scale}$ = ~ 10.1 µm/m/°C.

[2] Scale end movement typically < 1 µm up to +40 °C

# Maximum scale lengths

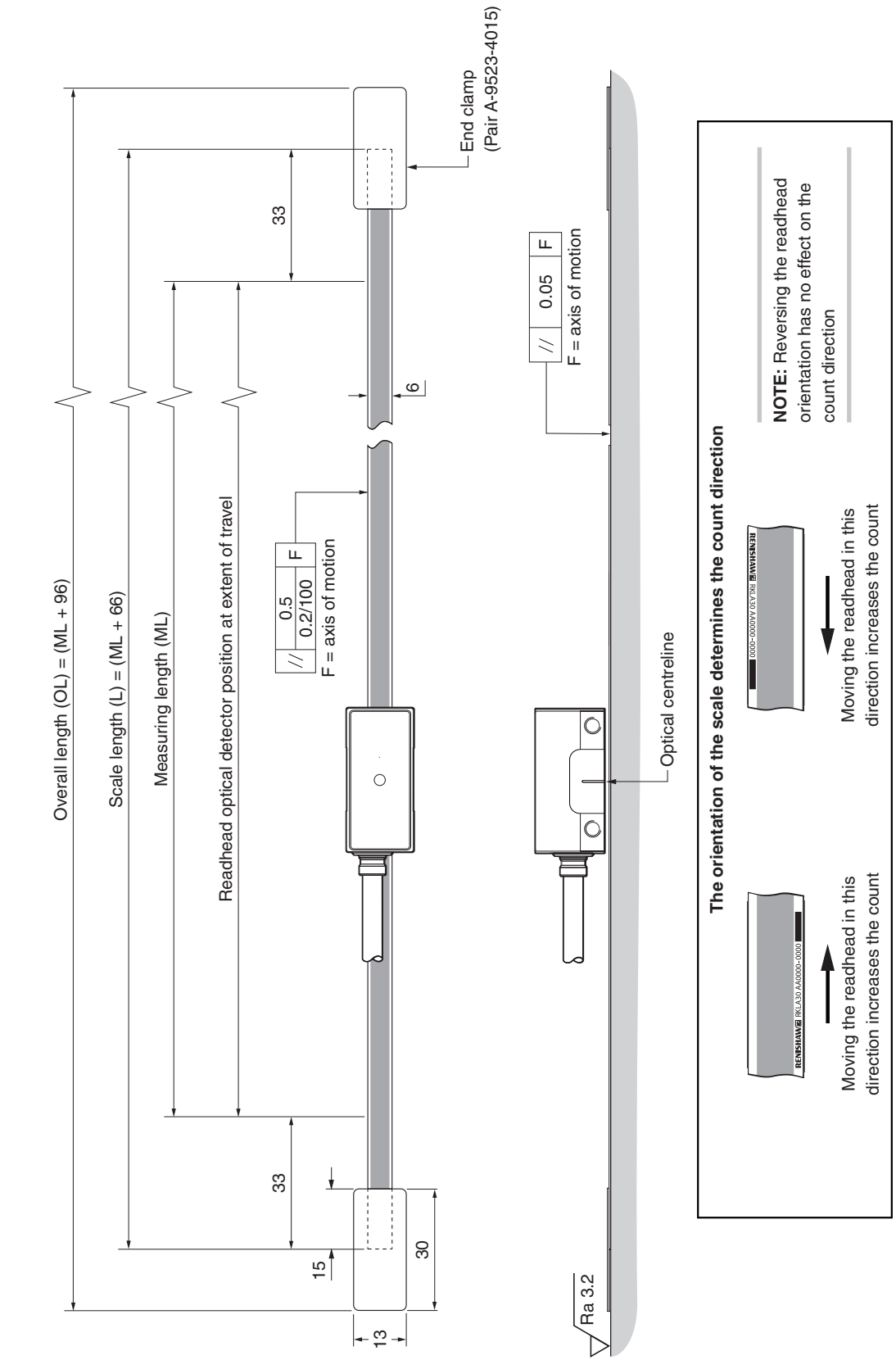
The maximum scale length depends upon the serial interface, readhead resolution and the number of position bits.

The table below shows the maximum scale length for each system:

| | | Resolution | | | |
|---|---|---|---|---|---|
| **Serial interfaces** | **Position bits** | **1 nm** | **5 nm** | **50 nm** | **100 nm** |
| **BiSS-C (uni-directional)** | 26 bit | 67 mm | 336 mm | 3.355 m | - |
| | 32 bit | 4.295 m | 21 m | 21 m | - |
| | 36 bit | 21 m | 21 m | 21 m | - |
| **FANUC** | 37 bit | 21 m | - | 21 m | - |
| **Mitsubishi** | 40 bit | 2.1 m | - | 21 m | - |
| **Panasonic** | 48 bit | 21 m | - | 21 m | 21 m |
| **Siemens DRIVE-CLiQ** | 28 bit | - | - | 13.42 m | - |
| | 34 bit | 17.18 m | - | - | - |
| **Yaskawa** | 36 bit | 1.8 m | - | 21 m | - |

# RKLA30-S installation drawing

Dimensions and tolerances in mm

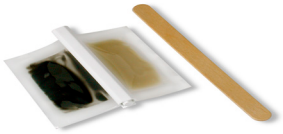



For further information on installation, refer to the *RESOLUTE RKLA30-S absolute linear encoder system* installation guide (Renishaw part no. M-9553-9400), which is available from the website at **www.renishaw.com/resolutedownloads**.

# Scale part numbers

| Part number | Available lengths | Available in increments of | Ordering instructions |
|---|---|---|---|
| A-6667-xxxx | 20 mm to 21 m | 10 mm | xxxx is the length in cm. Ordering A-6667-0045 for example will result in a length of 450 mm. |

# Scale accessory part numbers

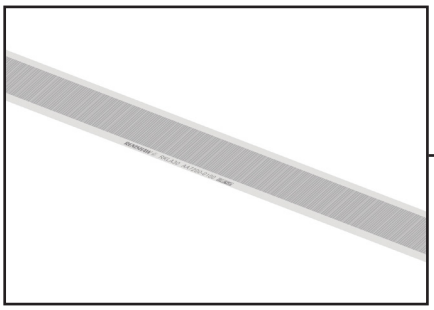
| Part description | Part numbers | Product image |
|---|---|---|
| **Guillotine**<br>For cutting RKLA30-S scale | A-9589-0071 |  |
| **Shears**<br>For cutting RKLA30-S scale | A-9589-0133 |  |
| **RKLA30-S side mount scale applicator**<br>For easy installation of the RKLA30-S scale | A-6547-1918 |  |
| **RGC-F**<br>**End clamp kit - epoxy mounted (standard 13 mm wide)**<br>The RGC-F end clamps master the RKLA30-S scale to the substrate material to match its thermal expansion. | A-9523-4015 |  |
| **End clamp kit, epoxy mounted, narrow (8 mm wide)**<br>The end clamps master the RKLA30-S scale to the substrate material to match its thermal expansion. | A-9523-4027 |  |
| **RGG-2 (2 part epoxy)**<br>The RGG-2 epoxy is recommended for the mounting of end clamps. | A-9531-0342 |  |
| **0.8 mm blue setting shim** [1]<br>Used for setting the correct distance (rideheight) between the readhead and the RKLA30-S scale. | M-9517-0122 |  |

[1] The shim is supplied with the readhead.

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# Compatible products

**RKLA30-S**





**RESOLUTE standard readheads**


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Part no.: L-9517-9918-02-B
Issued: 06.2025