Bell Everman

*Solutions For A World Of Motion*

# KAOS OEM

*A speedy, slim positioning stage for two-axis applications*

- **Lowest Moving Mass.** Compared to a conventional stacked linear motor positioning stage, KAOS has only about one-tenth the moving mass, balancing linear motor size and acceleration.
- **Slim Profile.** The shared-rail design results in a low-profile package. From top to bottom, KAOS measures less than half the height of a conventional stacked stage, enabling easy integration.
- **Enhanced Stiffness.** The low-profile mechancial design improves coupling between the payload and the linear bearings, increasing stiffness and reducing settling times.
- **Speed And Precision.** KAOS offers speeds in excess of 4 m/s and accelerations in excess of 4 g. Accuracy is ± 9 µm/meter. Bi-directional repeatability is ± 2 counts of the KAOS' direct reading encoders.
- **Easy To Integrate.** All utilities terminate in quick connects at the long axis midpoint. KAOS has integrated energy chains with room for extra utilities. Optical limits, carriage sensor and hard stops are all built in.
- **Built To Last.** KAOS features anodized aluminum construction with stainless steel hardware. All bearings are lubed for life.

## PART NUMBERING — KAOS – XX – XX – XX – XX – XX

**Series**
KAOS

**Drive**
L (Linear Motor)

**Length**
Available in 60 mm increments between 340 mm and 2,020 mm

**Motor**
0P (parallel wound, linear motor) or 0S (series wound, linear motor)
1P (parallel wound, linear motor) or 1S (series wound, linear motor)

**Feedback**
LE1 (Renishaw Tonic linear encoder, 1µm resolution)
LE.5 (Renishaw Tonic linear encoder, 0.5µm resolution)
LE.2 (Renishaw Tonic linear encoder, 0.2µm resolution)
LE.1 (Renishaw Tonic linear encoder, 0.1µm resolution)

**Environment**
N (Normal use, supplied with standard lubricants) or C (Clean room use, supplied with clean room lubricants)

EXAMPLE — KAOS – L – 1960 – 3S – LE1 – N

| TECHNICAL SPECIFICATIONS | KAOS OEM-L |
|---|---|
| **Type** | Direct Drive Linear (dual axis) |
| **Bearing type** | Long axis: (1) Preloaded 4-row ball<br>Short axis: (2) Preloaded 2-row ball |
| **Travel max (mm)** | Long axis: 1800<br>Short axis: 102 |
| **Motor type** | Air core 3-Phase linear motor, parallel or series wound, 3 coil lengths |
| **Accuracy (µm)**<br>Linear accuracy at stage centerline, after two-point temperature scale correction. | Long axis: ±4/meter<br>Short axis: ±10 |
| **Angular deviation (±arc-sec)**<br>Yaw angle maximum in the plane of the linear bearings. Most chassis are flexible enough that this is generally the achievable number when the unit is straightened on user surface | Long axis: ±8<br>Short axis: ±10 |
| **Bi-directional repeatability (µm)** | Long axis: ±2<br>Short axis: ±10 |
| **Uni-directional repeatablity (µm)**<br>If deceleration and payload are kept constant. | Long axis: ±1<br>Short axis: ±5 |
| **Encoder resolution(s): linear (µm), rotary (CPR)** | 1µm, 0.5µm, 0.1µm |
| **Speed (m/sec)** | 4 |
| **Continuous linear force (N) (coil length dash number)**<br>**Short axis as % of long axis, at (example payload kg)** | Long axis: 5.6(-0), 12.9(-1)<br>Short axis: 92%(.9), 70%(2.3) |
| **Max moment pitch, yaw for 10Mm @ 2m/sec (N-m)** | 3 |
| **Max moment, roll for 10Mm @ 2m/sec (N-m)** | 0.8 |
| **Moving mass (kg)** | 3.4(-0), 3.7(-1) |
| **Max payload (kg)** | 5 |
| **Chassis mass constant (C)**<br>Chassis mass = Length X .015 + C (kg) | C = 3.4(-0), 4.6(-1) |
| **Cable length from end of stage, std (±25 mm)** | 2850-<Length> (add 2m as an option) |