

# TRACLINE-6



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## PRODUCT SUMMARY

*Tracline-6 Modular screw driven linear translation stages combine precision features into a rugged, versatile stage design, suitable for use in automated, inspection, measurement and fabrication processes.*

- Precision ground ball screw
- Long-life linear motion guide bearing system
- Low-cost high performance stage
- Optional bellows way covers
- Optional hard cover with CLS sealing

## Tracline-6 Features & Benefits

*The precision-ground ball screw offers application versatility by providing high speed without sacrificing resolution or accuracy. This drive screw mechanism is integrally preloaded for a play-free operation and features low hysteresis which improves bi-directional repeatability. Available with a standard 10 mm pitch or optional 5 mm fine-pitch ball screw drive, and an optional linear encoder system tracline positioning stages are configurable to numerous medium duty and high precision applications.*

*Constant support geometry creates a mechanical bearing platform where the saddle is always supported at the load point in an identical way over the entire length of travel. This creates a trajectory with lower excursions. The pre-loaded multi-track precision linear guide system with four bearing carriages together with the mono-block extruded high-strength aluminum alloy base achieve higher accuracy and stiffness and superior flatness and straightness not affected by moment loading and load location*

## Applications

*Tracline positioning stages are designed as versatile high performance modules. Selected high-performance components are combined with precision fabricated machined components to achieve outstanding positioning performance with extended life expectancy. The stage base is fabricated from a specially selected hardened high-strength aluminum alloy slab, precision machined to extremely close tolerances. In addition, the saddle is equipped with a wear resistant hard-coat anodized protective finish.*

|                                      | <b>TL-6 SP</b>                                |
|--------------------------------------|---|
| Travel Length (mm)                   | 300-700                                       |
| Drive System                         | NEMA # 23 Servo motor Ground Ball Screw       |
| Maximum Acceleration                 | Payload Dependent                             |
| Maximum Speed                        | Unladen 400 mm/s                              |
| Maximum Thrust                       | 250 N   |
| Recommended Maximum Load             |   |
| L1 Parallel to base                  | 75 kg   |
| L2 Tension Perpendicular to base     | 75 kg   |
| L3 Compression Perpendicular to base | 75 kg   |
| Feedback                             | Rotary Encoder                                |
| Accuracy                             | +/- 20 $\mu$ /300mm                           |
| TTL resolution                       | 1 $\mu$ m/pulse                               |
| Repeatability                        | 5x Resolution                                 |
| Construction                         | Aluminum Alloy Body<br>Hard Coat Gray Anodize |

## Tracline-6 Specifications

|                              | <i>TL-612</i> | <i>TL-614</i> | <i>TL-618</i> | <i>TL-624</i> | <i>TI-630</i> |
|------------------------------|---------------|---------------|---------------|---------------|---------------|
| <b>Travel Length (mm)</b>    | 300 mm        | 350 mm        | 450 mm        | 600 mm        | 750 mm        |
| <b>Trajectory Control</b>    |               |               |               |               |               |
| <b>Accuracy</b>              |               |               |               |               |               |
| Rotary Encoder               | ± 20 μm       | ± 20 μm       | ± 25 μm       | ± 30 μm       | ± 40 μm       |
| Linear Encoder               | ± 10 μm       | ± 12 μm       | ± 15 μm       | ± 20 μm       | ± 25 μm       |
| <b>Straightness/Flatness</b> | ± 12 μm       | ± 14 μm       | ± 18 μm       | ± 24 μm       | ± 30 μm       |
| <b>Yaw/Pitch/Roll</b>        | 10 arc-sec    | 10 arc-sec    | 10 arc-sec    | 10 arc-sec    | 10 arc-sec    |
| <b>2 axis system</b>         |               |               |               |               |               |
| Orthogonality                |               |               |               |               |               |
| Standard Grade               | 30 arc-sec    | 30 arc-sec    | 30 arc-sec    | 30 arc-sec    | 30 arc-sec    |
| High Precision               | 10 arc-sec    | 10 arc-sec    | 10 arc-sec    | 10 arc-sec    | 10 arc-sec    |

### Notes:

- All trajectory data based on axis uniformly supported over full length on precision mounting surface with vibration isolation.
- Payload capacities are recommended values to achieve maximum lifetime in the worst-case scenario featuring maximum dynamic operation and off-center loading.
- Force, acceleration and speed performance are based on operations with NUTEC ELECTRONIC controls.