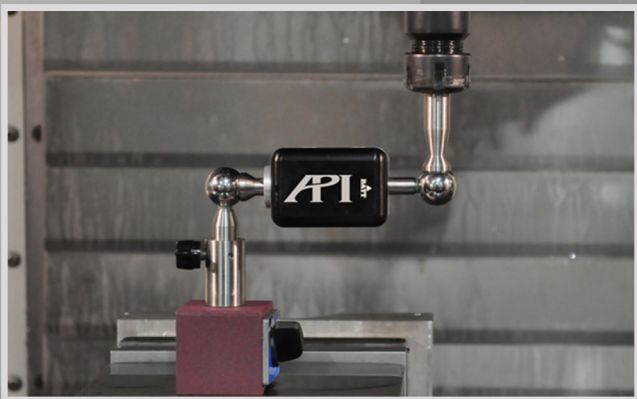
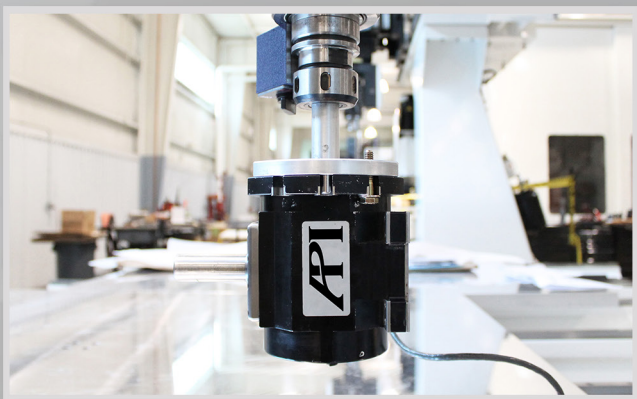




Machine Tool Calibration





Ballbar

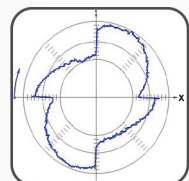
Rapid Machine Tool Performance Check

API's wireless Ballbar easily measures CNC machine performance to predict and diagnose servo errors and path deviations. Ballbar is a simple, cost-effective solution that is designed to improve overall machining quality and reduce costs to all end users.

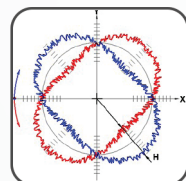
BALLBAR FEATURES & BENEFITS

- **Wireless Operation** - Connect wirelessly to the API VeriComp Software with Bluetooth connectivity.
- **Extended Battery** - 8 hour rechargeable battery.
- **Powerful Diagnostic Tool** - Capable of measuring lathes or CNC machines at any sweep angle within the 360° circular path to identify and diagnose servo and mechanical errors.
- **Early Detection Tool & Maintenance** - Add Ballbar Performance Verification to your regular maintenance cycle to identify and predict machine errors, reducing scrap, setup times, and production costs.
- **Easy-to-Use Software** - Perform multiple measurements in a single, simple setup to identify all machine servo errors with an intuitive analysis.
- **Complete Diagnostic Package** - Complement your API suite of products with the XD Laser and Spindle Analyzer for a complete CNC solution.

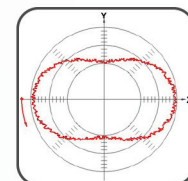
Ballbar - Rapid Machine Tool Performance Check



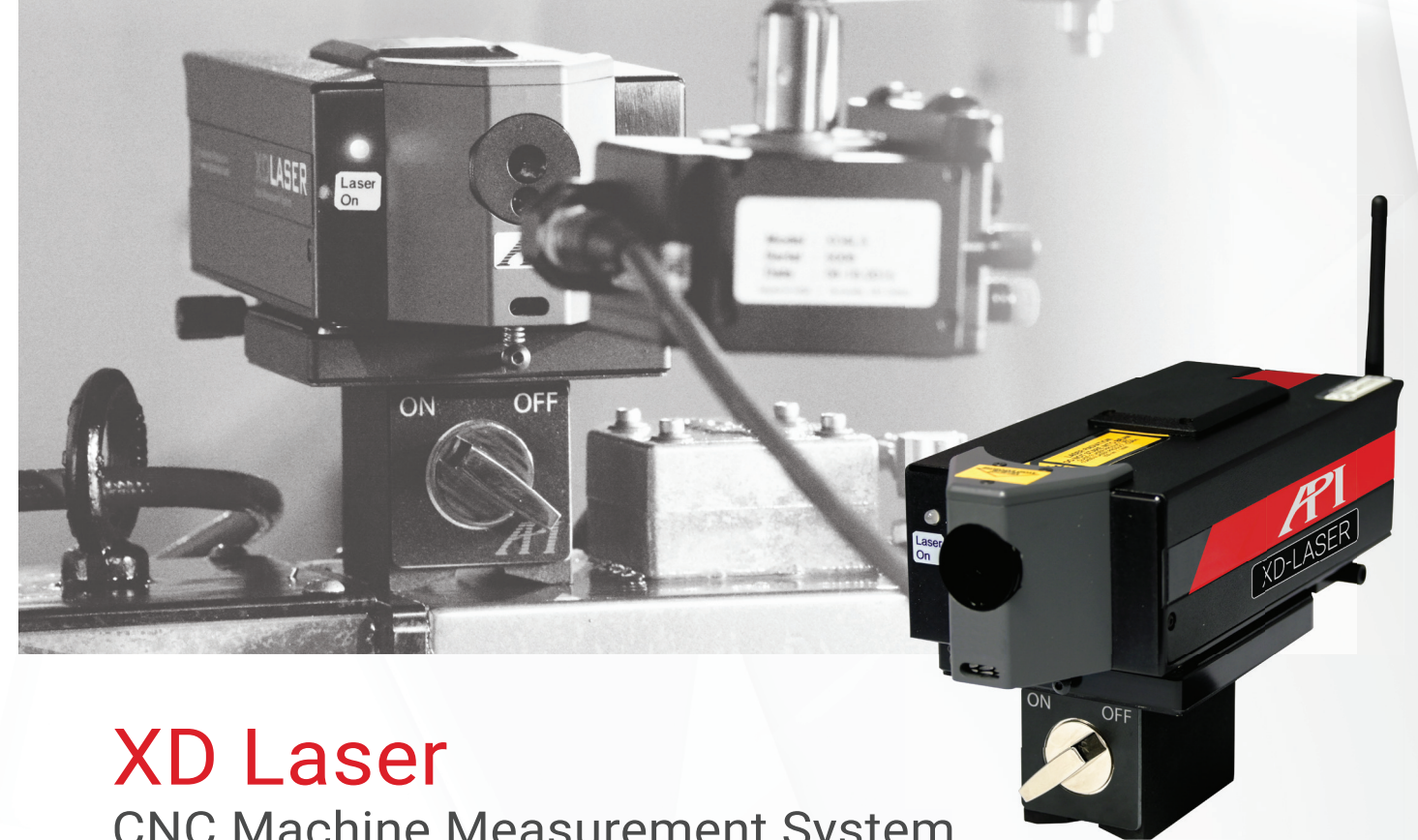
Backlash



Hysteresis



Scale Mismatch



XD Laser

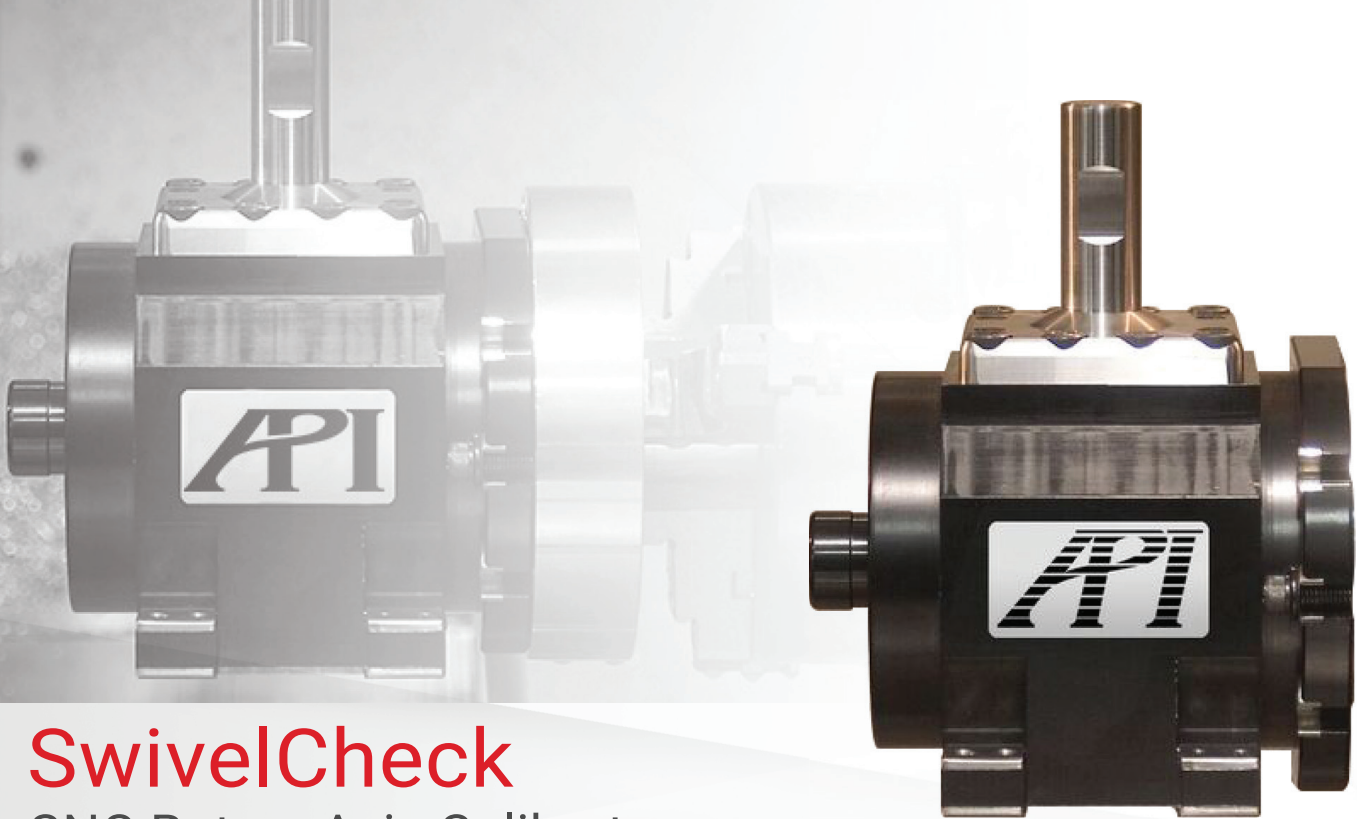
CNC Machine Measurement System

The XD Laser is a multi-dimensional interferometer offering a high level of flexibility for machine-tool calibration. XD is wireless and available in 1, 3, 5, and 6 Degree of Freedom (6DoF) configurations. The 6DoF XD laser provides simultaneous measurement for all axis errors in a single setup providing rapid machine-tool error assessment by evaluating velocity, acceleration, parallelism, squareness, flatness, straightness as well as linear, angular, and roll errors with a single set-up.

XD Laser is compact and provides easy setup and operation. The control box is integrated into the laser head for portability; the environmental station compensates in real time with software for control, data acquisition, and reporting all included as standard. Available options include linear and volumetric error compensation.

XD LASER FEATURES & BENEFITS

- **Rapid Measurement** - The XD Laser's fast, accurate measurement of machine positioning and axial capability makes complete machine assessment possible with up to 80% less machine downtime compared to conventional interferometers.
- **6 Degrees of Freedom Measurement** - XD Laser is the only assessment system that can measure all 6 error parameters simultaneously in a single set-up.
- **Measurement Flexibility** - XD Laser evaluates velocity, acceleration, parallelism, squareness, and flatness error of a machine.
- **Compact Design** - XD Laser system contains minimal parts and compact sensors for ease of setup and maximization of the machine measurement volume.
- **Software** - Includes XD Laser software for control, data acquisition and reporting. Linear and volumetric error compensation options are also available.
- **Service and Support** - The API global team provides consistent support anywhere in the world.



SwivelCheck

CNC Rotary Axis Calibrator

The SWIVELCHECK instrument measures and calibrates machine tool rotary axes, swivel axes, tilt tables, and pendulum axes. SWIVELCHECK utilizes a servo-driven motor in conjunction with an electronic level and precision rotary encoder to measure multiple parameters in a single setup. Mounting can be off-center of the rotating axis to measure swivel axes and trunnions without disassembling critical machine-tool components.

SWIVELCHECK can operate in automated or manual modes and includes software for control, data acquisition, and reporting. Used in conjunction with the API XD Laser, SWIVELCHECK can also measure table wobble on horizontal rotary tables.

SWIVELCHECK FEATURES & BENEFITS

- **SIMPLE OPERATION** - Measure rotary axes, swivel axes, vertical axes and tables with a single set-up just install and measure.
- **OFF-ROTATING AXIS MOUNTING** - Swivelcheck is the only tool that can be mounted off rotating axis center to measure swivel axes and trunnions without disassembling critical machine components.
- **FLEXIBLE CAPABILITY** - Paired with the XD Laser, Swivelcheck extends the operation to measure table wobble on horizontal rotary tables.
- **PORTABILITY** - Swivelcheck is fully portable and designed with ease of use, efficiency and accuracy in mind.
- **SOFTWARE** - Includes software for control, data acquisition and reporting.
- **SERVICE & SUPPORT** - The Automated Precision global team provides consistent support anywhere in the world.

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