

Model L-723 Triple Scan® Laser

Measures flatness,
straightness, and squareness
simultaneously,
with one setup.



Features & Benefits

1. Simultaneously Measure and Correct in Three Axes

- Real-time correction of geometric errors.
- 60% to 70% faster alignment than any other method.
- Allows checking and correcting multiple points/sections at the same time.

2. Fast, Simple Set-up

- Instant “on” — no warm-up.
- Get complete set of measurements while Helium Neon (HeNe) based laser systems (Interferometers) are warming up.
- Typical set-up time 20 minutes or less.
- After initial set-up, complete mechanical geometry measurements easily obtained in 30 minutes or less.

3. Geometric Alignment Capabilities

- Straightness
- Flatness
- Squareness
- Parallelism
- Way Twist
- Interrupted Surfaces
- Coplanarity

4. System Features

- Completely self-contained.
- Battery or AC powered.
- Multiple mounting orientations.
- Diode laser 2X more stable than HeNe.
- Laser Planes Flat to $\frac{1}{2}$ arc sec.
- Planes/beams are mutually square to 1 arc sec.
- Includes L-123 Pitch/Roll/Yaw base with coarse and fine adjustment and lighted levels accurate to 1 arc sec.



**Model L-723
Triple Scan®
Laser System**

A typical 723 Triple Scan Laser geometric alignment package consists of (from left to right) the R308V large LED display, A1518 self-contained target, 723 Triple Scan Laser and the A517 single axis target. Many other target options are available. (Instrument stand not shown.)

Machine Tool Alignment Applications

The L-723 Triple Scan® Laser allows you to check the entire machine with one set-up, *before* you begin an alignment. This quick analysis, where every part of the machine is checked to the same coordinate system, assures that *all* alignment problems are quickly identified.

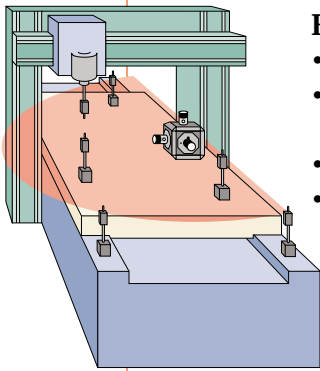
The Principals of Operation

The L-723 system measures 3-axis machine geometries by automatically sweeping 3 ultra-flat laser planes (like a ceiling and 2 walls). These planes are mutually square to each other to within 1 arc second. The system comes with laser targets, which record the position of the surface being measured relative to laser plane. When the beam hits the target it creates an analog signal, which is converted to a digital number. The number is displayed on a built-in readout, a hand-held readout or in a computer using laser alignment software.

To measure or align machine geometries, the user simply makes a laser plane parallel to 3 reference points (3 points define a plane). This is usually referred to as "bucking in." The pitch and roll of the laser plane are adjusted by using coarse and fine micrometers built into the base of the laser. After bucking in, the target is moved to various points along the surface where

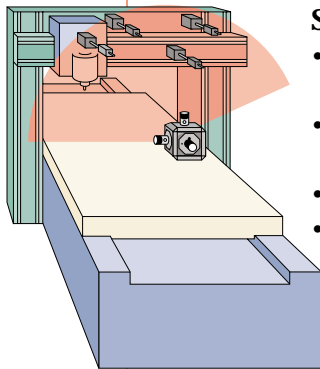
it measures deviation from the laser reference plane. Since the measurement is live or dynamic, the machine can then be adjusted using the target as a digital indicator.

If squareness measurements are required, one of the vertical planes must be made parallel to either an axis of travel or a way surface by using the yaw adjustment in the base. Measuring squareness is as simple as zeroing a horizontal target on one part of the column and measuring the deviation as it travels up or down. Again, the target can be used as a digital indicator to adjust the column.



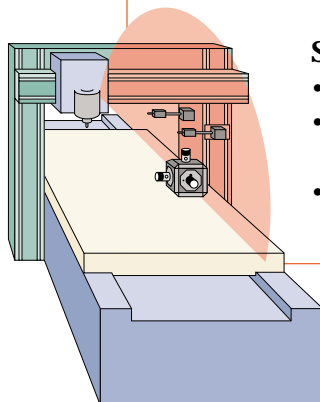
Flatness

- Tables and Surfaces
- Ways and Lines of Motion
- Way Twist
- X/Y Axis Travel



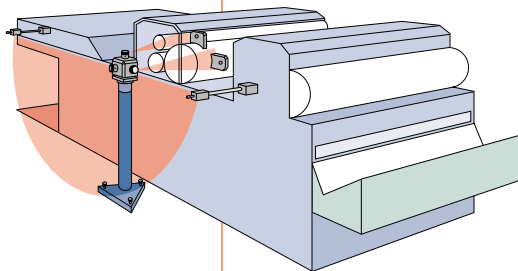
Squareness

- Column Twist, Lean, Stagger
- Crossrail Twist and Flatness
- Way Twist
- X/Y Axis Travel



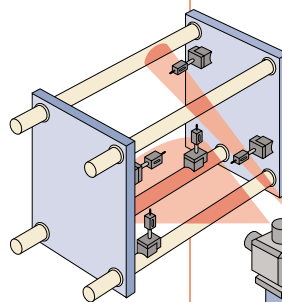
Straightness

- Columns-to-Surface
- Ways and Lines of Motion
- Z/X Axis Travel



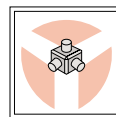
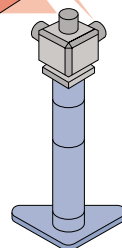
Process Mills

- Paper machinery
- Printing presses
- Textile machinery
- Plastic machinery
- Film processing machinery



Platen Alignment

- Injection molding machines and presses.



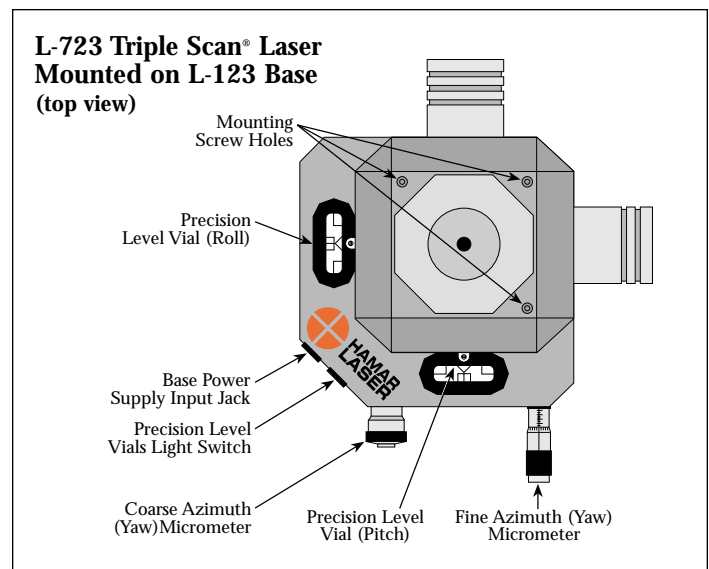
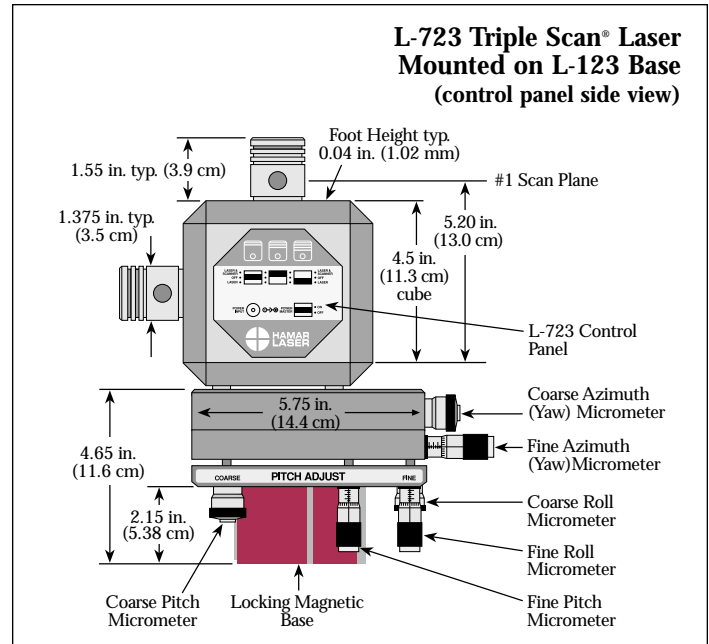
Specifications

Model L-723 Triple Scan® Laser

Weight	Laser: 6.75 lbs. (3.1 kg) Battery Pack: 1 lbs. (0.45 kg) Base: 10 lbs. (4.54 kg)
Material	Aluminum and stainless steel Base: Aluminum
Laser Type	Visible Diode, 670 nm wavelength Class II (Class I in scanning mode) .160" (4.06 mm) beam diameter
Beam Power	.09 mW per straight beam
Beam Stability	.0001"/hr/°F (.005 mm/hr/°C) translational 0.2 arc sec./hr/°F (0.36 arc sec./hr/°C) angular
Beam Straightness	10 microinch/ft, ±.0001" air noise
Beam/Plane Flatness	30µin./ft (2.5µ/M) plus maximum translation error of +.0002" or -.0002" (5.0µ) 360° sweep 10µin./ft (0.8µ/M) plus maximum translation error of +.0002" or -.0002" (5.0µ) 90° sweep
Beam/Plane Squareness	3 beams mutually square to within 1.0 arc second 3 planes mutually square to within 1.0 arc second
Mechanical Parallelism/Squareness	Plane #1 (top turret) parallel to base within .0003"/ft (.025 mm/M) Top and bottom mounting feet parallel within .0002"/ft (.017 mm/M) Side and bottom mounting feet square within .0004"/ft (.033 mm/M)
Operating Modes	1, 2, or 3 beams and/or 1, 2, or 3 scanned planes in any combination, individually switched
Power Supply	9V DC external battery pack (4 cells) 115V AC adapter
Power Draw	(see chart)
Coarse Range	±1.5°
Fine Resolution	.0001" fine micrometer= 0.17 arc second (.001"/100 ft)



Hamar Laser Instruments, Inc.
5 Ye Olde Road, Danbury, CT 06810 • Phone: 800.826.6185 • Fax: 203.730.4611
E-mail: sales@hamarlaser.com • Internet: http://www.hamarlaser.com



Power Draw	Laser Only	Laser & Scanner	Battery Life*
1 Beam	100 mA	130 mA	2.5 hrs.
2 Beams	180 mA	230 mA	1.4 hrs.
3 Beams	260 mA	330 mA	1.0 hrs.

* Per 9V alkaline battery (500 mA hrs.). Multiply battery life figure by the number of batteries used (external battery pack uses 4 cells).