

**MCV-500C Complete Laser Calibration system for
Static positioning accuracy and Dynamic contouring accuracy**

GENERAL DESCRIPTION:

The MCV-500C Complete Laser Calibration System is designed for the measurement of both the static positioning errors (18 errors of the 21 rigid body errors) and dynamic contouring errors. It is a modular design, a combination of MCV-500, LB-500, SD-500 and AM-500. The MCV-500C can perform a quick check of the machine's performance based on the ASME B5.54 standard's one-day test. Using the laser vector technique, the volumetric positioning errors, including 3 displacement errors, 6 straightness errors and 3 squareness errors can all be measured. The measured errors can be used to generate volumetric compensation files to achieve higher volumetric positioning accuracy.

For circular contouring measurements, the MCV-500C laser calibration system is non-contact, the radius can be varied continuously down to less than a fraction of an inch and there is no limit on the feed rate. The contouring accuracy can be used to diagnose the dynamic performance and for servo parameter setting of the machine. The true radius, the feed rate and the acceleration/deceleration can all be measured.

SPECIFICATIONS:

Resolution	1 microinch (0.01 micron)						
Long Term Stability	0.1 PPM						
Accuracy	1 PPM ± 1 microinch/inch (± 1 micron/m), ± 1 arcsec						
Range	50 feet Linear (15 meters) 40 inches Circular (1 meter) 40"x40"x40" Volumetric* (1 cubic meter Volumetric*)						
Radius	0.1 to 3 inch (2.5 to 75 mm)*						
Data Rates	1 – 10,000 data/second						
Slew Rate	160 ips (4m/s)						
Power	90-230 VAC, 50-60 Hz						
Operating Environment	<table style="width: 100%; border: none;"> <tr> <td style="width: 30%;">Temperature</td> <td>60-90 °F (15-33 °C)</td> </tr> <tr> <td>Altitude</td> <td>0-10,000 feet (0-3000m)</td> </tr> <tr> <td>Humidity</td> <td>0-95% (non-condensing)</td> </tr> </table>	Temperature	60-90 °F (15-33 °C)	Altitude	0-10,000 feet (0-3000m)	Humidity	0-95% (non-condensing)
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Altitude	0-10,000 feet (0-3000m)						
Humidity	0-95% (non-condensing)						

SYSTEM CONTENTS:

L-109 (Quantity of 1)

The LDDM laser head assembly is a compact device, which collects the data and transmits it to the processor module for processing. N.I.S.T. Traceable Calibration.

P-108D (Quantity of 1)

The processor module contains the electronics for analog and digital signal processing, conversion, and automatic temperature and pressure compensation. Data is exported to a computer via an RS-232 and a PCMCIA interface

IATCP (Quantity of 1)

Air temperature and material temperature sensors; plug into the processor module. The barometric pressure sensor is located inside the processor module.

R-102A (Quantity of 1)

A 0.5" (12.7mm) diameter retroreflector is provided as the target on the axis.

IPC5-1000 (Quantity of 1)

The interface PCMCIA card and cable. The maximum data rate is 10 000 data/sec.

W-500 (Quantity of 1)

WindowsTM software for linear display, linear data collection and analysis based on NMTBA, VDI, ISO, ASME B5.54, and ASME B5.57 standards is provided.

W-500LB (Quantity of 1)

WindowsTM software for data collection and analysis of circular plots is provided. This software also allows the operator to plot and view information on the axis velocity and acceleration.

W-500SD (Quantity of 1)

WindowsTM software for data collection and analysis of volumetric data is provided. This software also allows the operator to plot and view information on the axis linear positioning errors, vertical straightness errors, horizontal straightness errors and squareness errors. Compensation files for various controls can also be generated.

W-500PC (Quantity of 1)

WindowsTM software for Laser/Ballbar analysis is provided. This software analyzes the data and outputs information on various machine errors.

W-500ST (Quantity of 1)

Straightness button to analyze Angular data.

LD-03 (Quantity of 1)

A magnetic base is provided for mounting convenience.

LD-14A (Quantity of 1)

An adapter platform is provided to hold the laser head for spindle or machine mounting.

LD-37 (Quantity of 1)

A 0.5" (12.7mm) diameter 90-degree beam bender is supplied for alignment convenience.

LD-37S (Quantity of 1)

A 0.5" (12.7mm) diameter beam bender is supplied to steer the laser beam for alignment convenience.

LD-71 (Quantity of 1)

A 6" (150mm) flat mirror is provided as the target on the axis for circular measurements.

LD-69 (Quantity of 1)

Short range optical adapter for flat-mirror target.

LD-71S (Quantity of 1)

A 4"x3"(100mm x 75mm) flat mirror with steering and cross-link is provided as the target on the axis for volumetric measurements.

LD-77 (Quantity of 1)

8" (200 mm) extension for angular measurement.

LD-21L (Quantity of 1)

The system comes with a 12-foot (3.6m) cable set for connecting the laser head and processor module. A 6-foot (1.8m) power cord for connecting the processor module to line voltage, and RS-232 cables are also provided.

LD-20D (Quantity of 1)

A heavy-duty foam-lined carrying case is supplied for easy transportation of the system.

OPTIONS THAT CAN BE ADDED:

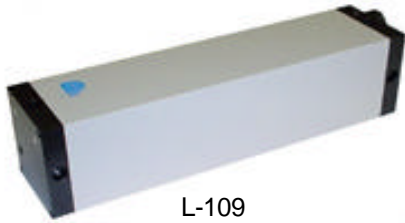
The following items may be added to the package at the customer's prerogative:

TRAIN: Operator Training.

LD-70: Long Range Optical Adapter for Volumetric measurements (4-meter range).

***NOTE:** Large mirrors to increase radius size are also available on request.

MCV-500C PARTS



L-109



R-102A



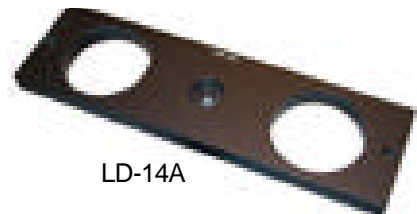
P-108D



IATCP



Software CD



LD-14A



IPC5-1000



LD-03



LD-21L



LD-71S



LD-37S



LD-71



LD-69



LD-03P



LD-37



LD-20D



LD-77