

# Precision Sensor Applications High-accuracy Length Measuring Systems

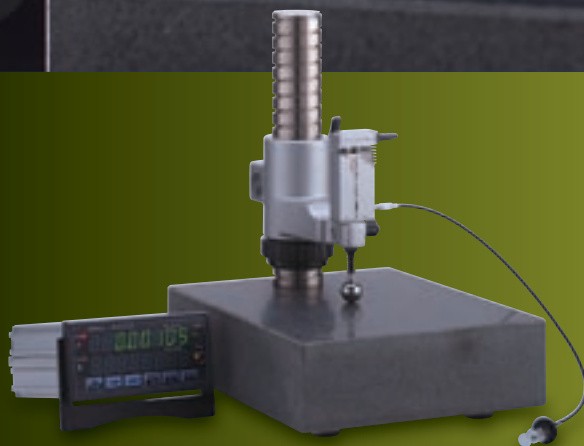


*Ideal for Measuring the Outside Diameter of  
Steel Balls and Rollers for Anti-friction Bearings*

Resolution

**0.005  $\mu\text{m}$  (5 nm)**

**0.01  $\mu\text{m}$  (10 nm)**



Sensor Systems

# High-accuracy Length Measuring System

## Features

- The wide 10mm measuring range is achieved with a high resolution and accuracy specification that eliminates the inconvenience of the need for frequent resetting to master gages, as required by conventional comparator-type gages, and so fewer of these gages are needed.
- Measurement data can be stored and controlled by PC software.
- The system can measure high-precision parts such as steel balls and rollers for anti-friction bearings by comparison with a master gage, also allowing use as the standard of calibration and evaluation of master gages.



## LGH stand

### 971750

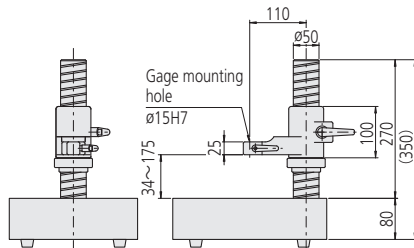
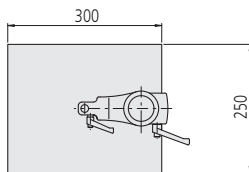
This LGH stand greatly helps the gage to achieve high accuracy.  
Mass: 23 kg

Maximum measuring range

LGH-0510(C)-B-EH :  
0-139 mm

LGH-1010(C)-B-EH :  
0-137 mm

Measuring table:  
granite



## Inspection of high-precision parts

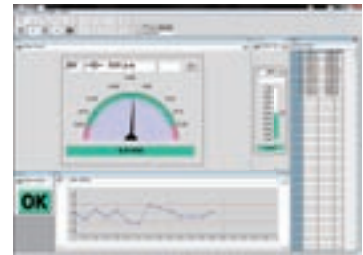


\* Needle contact-point mounting example

## PC software: SENSORPAK

### 02NGB070

This is a software program that allows graphic meter indication and control chart display as well as record/storage of measurement data.

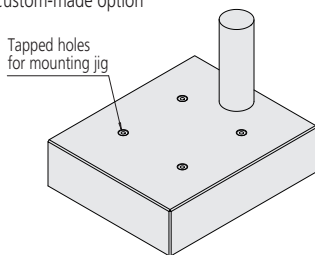


\* To connect between a PC and the exclusive counter, a USB cable (A-B type) is required separately.

## Custom stand 1\*

Useful for making a stand to mount a custom jig (to user-specified dimensions).

\* Custom-made option



## ø30mm mounting bush\*

For mounting on a commercially-available stand.

(User-specified size acceptable)

\* Custom-made option



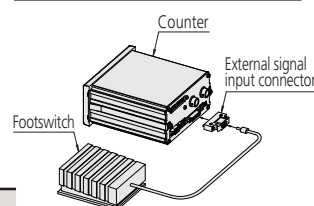
## External signal input connector\*

Allows external signals to trigger data output and zero-set the counter in combination with the foot switch.

\* Custom-made option

### Application example

- Data output trigger
- Preset (zero-set)
- Peak hold clear

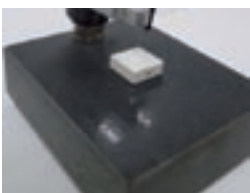


## Custom stand 2\*

Useful for making a stand incorporating a high-accuracy ceramic platen.

(Flatness: 0.3µm)

\* Custom-made option



## Spindle lifting cable

### 971753 Mass: 50 kg

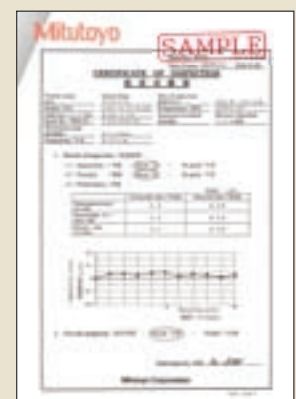
Allows the LGH spindle to be lifted and lowered without touching the measuring head.



LGH Stand	971750
Spindle lifting cable	971753
PC software: SENSORPAK	02NGB070

## Quality Assurance

### Standard Accessories: Inspection certificate



### Option

- Calibration certificate
- Traceability system chart

## Specifications

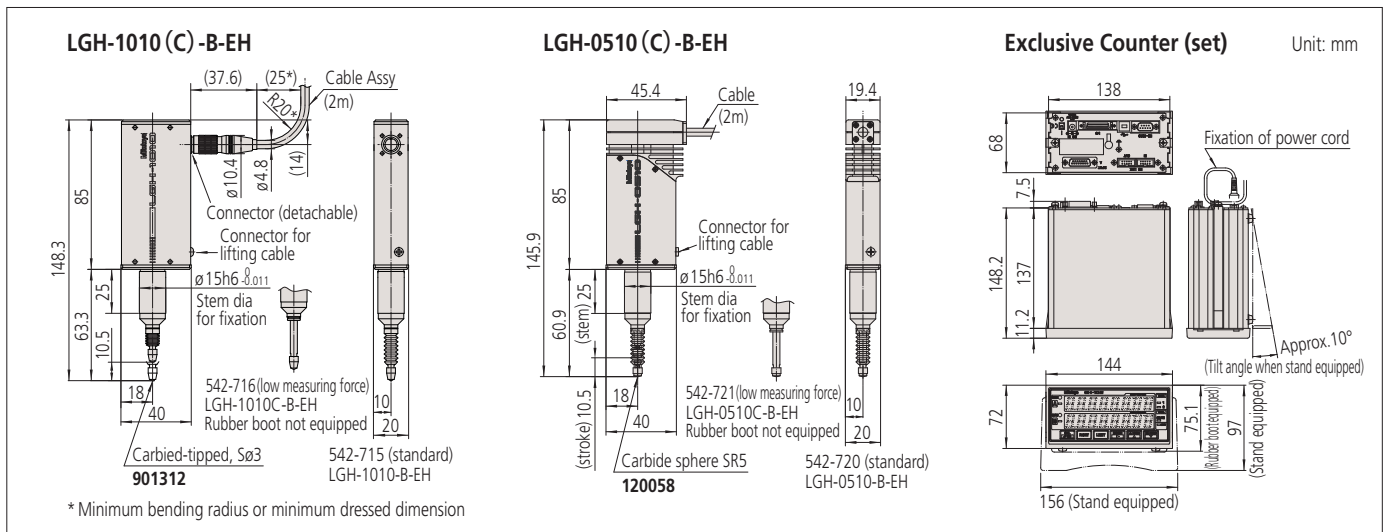
Order No.	Resolution 0.01 $\mu$ m / Accuracy 0.2 $\mu$ m model		Resolution 0.005 $\mu$ m / Accuracy 0.1 $\mu$ m model		
	542-715 (Standard)	542-716 (Low measuring force)	542-720 (Standard)	542-721 (Low measuring force)	
Model	LGH-1010-B-EH	LGH-1010C-B-EH	LGH-0510-B-EH	LGH-0510C-B-EH	
Measuring range	10mm				
Resolution	0.01 $\mu$ m (0.05 $\mu$ m, 0.1 $\mu$ m, 0.5 $\mu$ m, 1 $\mu$ m can be selected from the counter)		0.005 $\mu$ m (0.01 $\mu$ m, 0.05 $\mu$ m, 0.1 $\mu$ m can be selected from the counter)		
Measuring accuracy (20°C) *1	0.2 $\mu$ m		0.1 $\mu$ m		
Repeatability (20°C) *1	0.1 $\mu$ m (2 $\sigma$ )		0.02 $\mu$ m (2 $\sigma$ )		
Retrace error (20°C) *1	0.1 $\mu$ m		0.05 $\mu$ m		
Measuring force	Contact point downwards	0.65 N or less	Approx. 0.12 N	0.65 N or less	Approx. 0.1 N
	Contact point horizontal	0.55 N or less	Not applicable	0.55 N or less	Not applicable
	Contact point upwards	0.45 N or less	Not applicable	0.45 N or less	Not applicable
Maximum operation speed	In normal measurement: 700 mm/sec; for peak detection: 120 mm/sec		In normal measurement: 250 mm/sec		
Contact point	Carbide-tipped, $\varnothing$ 3 mm (M2.5 (P=0.45) x 5 mm), standard contact point: <b>901312</b>		Carbide sphere SR5 (M2.5 (P=0.45) x 5 mm), standard contact point: <b>120058</b>		
Stem	$\varnothing$ 15 mm				
Functions	Zero-setting, presetting, direction changeover, tolerance, judgment (3 steps/5 steps)				
Hold function	Yes		No		
Power supply	Supplied AC Adapter, or +12 to 24V DC, max 700mA				
Operating temperature/humidity	0°C - 40°C (Reference temperature 20°C)/20 - 80%RH (no condensation)		10°C - 30°C (Reference temperature 20°C)/30 - 70%RH (no condensation)		
Storage temperature/humidity	-10°C - 60°C/20 - 80%RH (no condensation)		-10°C - 60°C/20 - 80% (no condensation) *2		
Standard accessories	Wrench for contact point, rubber boot, stand, washer (for counter), AC Adapter, AC cord, DC plug, user's manual, inspection certificate				

\*1 Applies when used with counter (excluding quantizing error).

\*2 The storage temperature/humidity range after unpacking is the same as the operating temperature/humidity range.

Refer to the Linear Gage (Catalog No. E13013) for more details

## Dimensions



## 0.1 $\mu$ m and 1 $\mu$ m resolution indicator systems

**0.1 $\mu$ m resolution, digital readout**  
Linear gage LGF-0110L-B, EH-101P

542-181  
LGF-0110L-B

**IP66**



**0.1 $\mu$ m graduation, analog readout**  
Mu-checker MCH-385, M-551

519-385  
MCH-385

• Cartridge Head interchangeable contact points for dial indicators can be used M2.5x5



**1 $\mu$ m resolution, digital readout**  
Digimatic indicator ID-C112AXB



Refer to Chapter F: Digimatic Indicators; and Chapter G: Sensor Systems. of Mitutoyo's general catalog for more details.



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