Mitutoyo

SERIES 542
High-accuracy Linear Gage
LGH Series

Mitutoyo Quality

New Contact-type Length Measuring Sensor Offers High Accuracy and Resolution and a Wide Measuring Range

Resolution
0.005 µm (5nm)
0.01 µm (10 nm)

1.23456-

Sensor Systems

NEW Products

Mitutoyo

SERIES 542
High-accuracy Linear Gage
LGH Series

Features

- This series has achieved the outstanding accuracy of 0.005/0.01µm (according to model), equivalent to that of a laser interferometer, and a wide measuring range of 10mm.
- A compact body design makes a significant contribution to a downsizing of this gage itself, which is best suited for calibration/evaluation of master gages as well as measurement of high-precision parts and as a length measuring sensor incorporated into high-precision positioning/control units.

- A low measuring force model is available. This enables measurement of easily-deformed workpieces or the thickness of delicate films.
- Every LGH series gage is bundled with a dedicated counter.

LGH-1010(C)-B-EH

- This series is equipped with a newly adopted photoelectric reflection-type linear encoder, to achieve an excellent resolution of 0.01µm, a measuring accuracy of 0.2µm and a measuring range of 10mm at a low price.
- Responsivity has been improved by 2.8 times (250mm/s => 700mm/s) compared to the previous model.
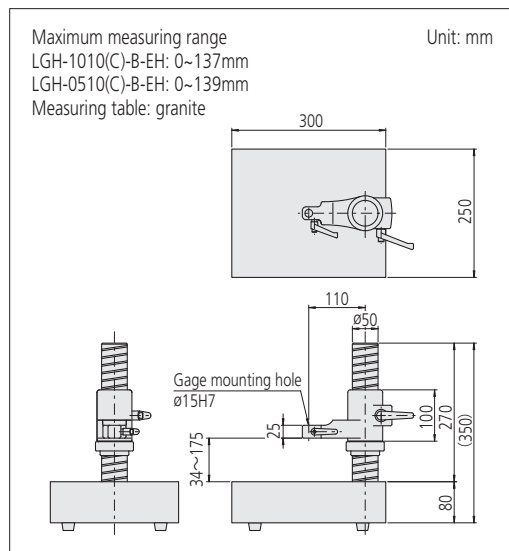
LGH-0510(C)-B-EH

- This series is equipped with a newly developed ultra-high precision transmission-type linear encoder, thereby achieving the outstanding resolution of 0.005µm (5nm).
- A measuring accuracy of 0.1µm has been attained over the wide measuring range of 10mm. This series is most suited for calibration/evaluation of master gages where its wide measuring range is a great advantage.

Optional Accessories

- LGH stand: **971750**
- Spindle lifting cable: **971753**
- SENSORPAK (Measurement data loading software): **02NGB070**

LGH stand
971750

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

Maximum measuring range   Unit: mm
LGH-1010(C)-B-EH: 0~137mm
LGH-0510(C)-B-EH: 0~139mm
Measuring table: granite

300
250
110
ø50
Gage mounting hole
ø15H7
100
270
(350)
25
34~175
80

SENSORPAK (Measurement data loading software)
02NGB070

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

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

0.00005

OK

Spindle lifting cable
971753   Mass: 50g
This is a spindle lifting release for LGH.

Quality Assurance

Standard Accessories:
Inspection certificate
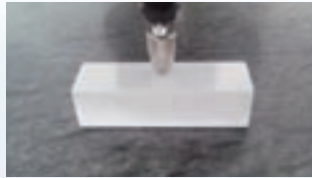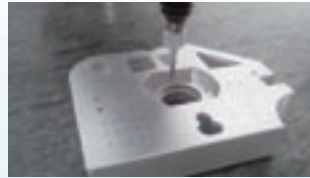
Mitutoyo   SAMPLE

Option
· Calibration certificate
· Traceability system chart

Application

Master gage calibration/evaluation

Inspection of high-precision parts

* Needle contact-point mounting example

Specifications

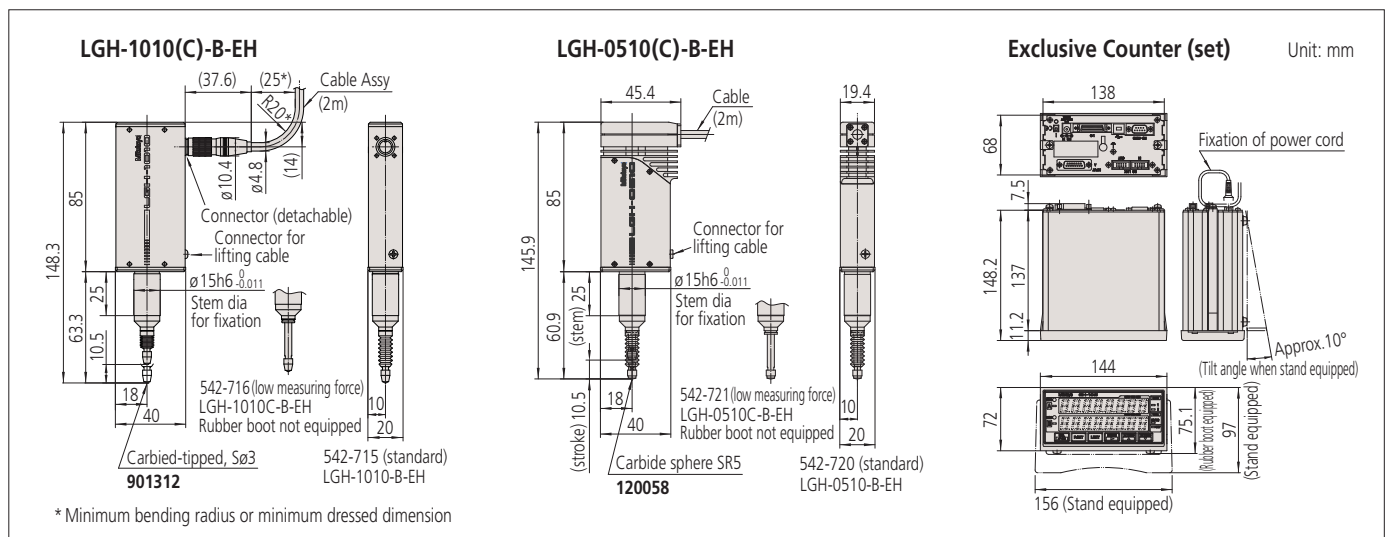|		Resolution 0.01µm / Accuracy 0.2µm model		Resolution 0.005µm / Accuracy 0.1µm model	
Order No.		**542-715** (Standard)	**542-716** (Low measuring force)	**542-720** (Standard)	**542-721** (Low measuring force)
Measuring range		10mm			
Resolution		0.01µm (0.05µm, 0.1µm, 0.5µm, 1µm can be selected from the counter)		0.005µm (0.01µm, 0.05µm, 0.1µm can be selected from the counter)	
Measuring accuracy (20°C) *1		0.2µm		0.1µm	
Repeatability (20°C) *1		0.1µm (2σ)		0.02µm (2σ)	
Retrace error (20°C) *1		0.1µm		0.05µm	
Measuring force	Contact point downwards	0.65N or less	Approx. 0.12N	0.65N or less	Approx. 0.1N
	Contact point horizontal	0.55N or less	Not applicable	0.55N or less	Not applicable
	Contact point upwards	0.45N or less	Not applicable	0.45N or less	Not applicable
Position detection method		Photoelectric reflection type linear encoder		Ultra-high accuracy transmission type linear encoder	
Detectable operation speed		In normal measurement: 700mm/sec; for peak detection: 120mm/sec		In normal measurement: 250mm/sec	
Mass of gage head		Approx. 370g		Approx. 370g	
Contact point		Carbide-tipped, Sø3mm (M2.5 (P=0.45)×5mm), standard contact point: **901312**		Carbide sphere SR5 (M2.5 (P=0.45)×5mm), standard contact point: **120058**	
Stem		ø15mm			
Bearing		Linear ball type			
Output cable length		Approx. 2m			
Operating temperature/humidity		0°C〜40°C (Reference temperature 20°C)/20〜80%RH (no condensation)		15°C〜25°C (Reference temperature 20°C)/30〜60%RH (no condensation)	
Storage temperature		−10°C〜60°C/20〜80%RH (no condensation)		−10°C〜60°C/20〜80% (no condensation) *2	
Counter Specifications					
Display range		±999.99999mm		±99.999995mm	
Functions		Zero-setting, presetting, direction changeover, tolerance, judgment (3 steps/5 steps), RS-RINK			
Hold function		Yes		No	
Interface		RS-232C, USB (only for SENSORPAK), Digimatic (Printer:DP-1VR)*3, I/O Connector			
External output		•RS-232C: counting data •Digimatic output: counting data*3 •I/O connector: counting data (simplified BCD), tolerance judgment result, simplified analog output			
External control		Zero-setting, presetting, data hold, peak measurement mode selection*4, peak clear*4			
Power supply		Suppplied AC Adapter, or +12 to 24V DC, max 700mA			
Current consumption		8.4W (MAX 700mA), Ensure at least 1A power supply per unit.			
Mass of counter		Approx. 900g (AC Adapter excluded)			
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.

*3 Digimatic output shall be up to 6 digits of data. For data of 7 digits or more, all digits will not be output to the display.

*4 These functions are only available on **542-715** and **542-716**.

Dimensions

LGH-1010(C)-B-EH

(37.6) (25*) Cable Assy (2m)
R20*
ø10.4 ø4.8 (14)
85
148.3
63.3
25
10.5
18
40
Connector (detachable)
Connector for lifting cable
ø15h6 $_{-0.011}^{0}$ Stem dia for fixation
542-716 (low measuring force) LGH-1010C-B-EH Rubber boot not equipped
Carbied-tipped, Sø3 **901312**
10
20
542-715 (standard) LGH-1010-B-EH

LGH-0510(C)-B-EH

45.4 Cable (2m)
19.4
85
145.9
60.9
25 (stem)
(stroke) 10.5
18
40
Connector for lifting cable
ø15h6 $_{-0.011}^{0}$ Stem dia for fixation
542-721 (low measuring force) LGH-0510C-B-EH Rubber boot not equipped
Carbide sphere SR5 **120058**
10
20
542-720 (standard) LGH-0510-B-EH

Exclusive Counter (set)   Unit: mm

138
68
7.5
148.2
137
11.2
72
144
156 (Stand equipped)
75.1 (Rubber boot not equipped)
97 (Stand equipped)
Fixation of power cord
Approx.10° (Tilt angle when stand equipped)

* Minimum bending radius or minimum dressed dimension

Coordinate Measuring Machines	Vision Measuring Systems	Form Measurement	Optical Measuring

Sensor Systems	Test Equipment and Seismometers	Digital Scale and DRO Systems	Small Tool Instruments and Data Management

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Mitutoyo supports you from start to finish.**

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Apart from the basics of calibration and repair, Mitutoyo offers product and metrology training, as well as IT support for the sophisticated software used in modern measuring technology. We can also design, build, test and deliver bespoke measuring solutions and even, if deemed cost-effective, take your critical measurement challenges in-house on a sub-contract basis.

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