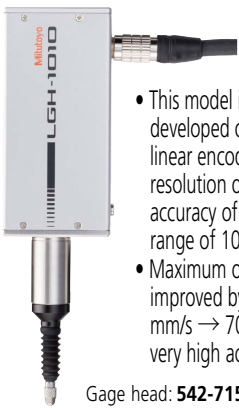


Linear Gages

LGH (0.01/0.005 µm resolution) SERIES 542 — High-accuracy/resolution Type

- This series has achieved very high accuracy combined with a resolution of 0.01/0.005 µm (according to model), practically equivalent to that of a laser interferometer, and a wide measuring range of 10 mm.
- 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 for those applications where measurement of easily deformed or damaged workpieces is required.
- Every **LGH** Series gage is bundled with a dedicated counter.



Gage head: **542-715**

- This model is equipped with a newly developed optical reflection-type linear encoder, achieving an excellent resolution of 0.01 µm, a measuring accuracy of 0.2 µm and a measuring range of 10 mm at a low price.
- Maximum operating speed has been improved by a factor of 2.8 times (250 mm/s → 700 mm/s) while maintaining very high accuracy.



Gage head: **542-720**

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



Dedicated counter

TYPICAL APPLICATIONS

Master gage calibration/evaluation



Inspection of high-precision parts

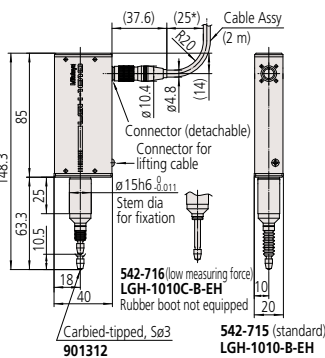


Needle contact-point mounting example

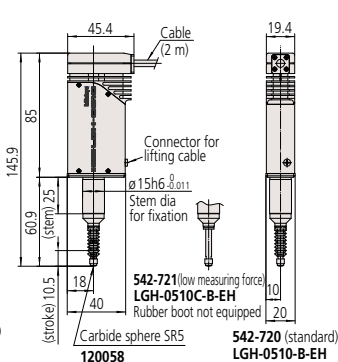
DIMENSIONS

Unit: mm

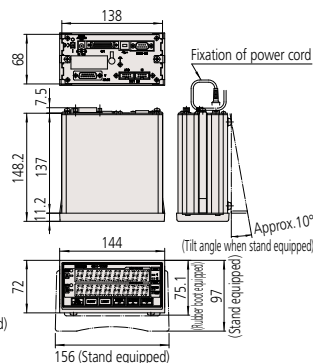
542-716



542-721



Dedicated counter (set)

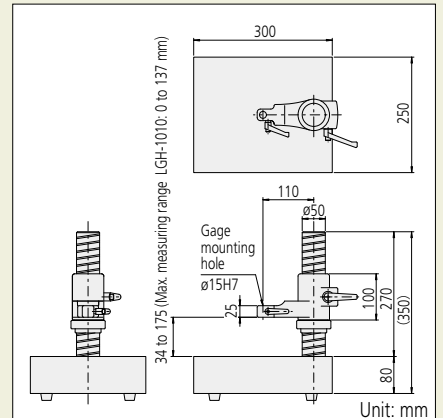


* Minimum bending radius or minimum dressed dimension

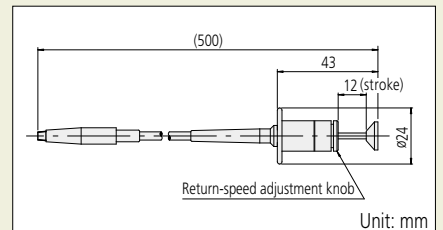


Optional Accessories

- Measuring stand: **971750**



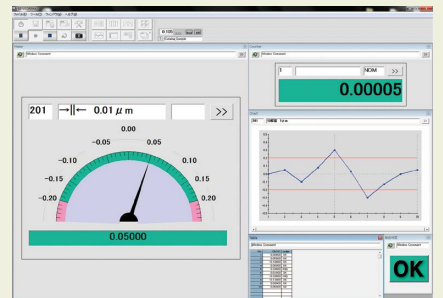
- Spindle lifting cable: **971753**



- I/O connector: **02ADB440**



- **SENSORPAK**



Note: Refer to page G-16 for more details.

- Rubber boot: **238772**
(Spare for **542-715** and **542-720**)



Refer to the Linear Gage Story (**E13007**) for more details.

SPECIFICATIONS

Order No.	Resolution 0.01 μm / Accuracy 0.2 μm model		
	542-715 (Standard)	542-716 (Low measuring force)	
Measuring range	10 mm		
Resolution	0.01 μm (0.05 μm, 0.1 μm, 0.5 μm, 1 μm can be selected from the counter)		
Measuring accuracy (20 °C)*1	0.2 μm		
Repeatability (20 °C)*1	0.1 μm (2 σ)		
Retrace error (20 °C)*1	0.1 μm		
Measuring force	Contact point downwards	0.65 N or less	Approx. 0.12 N
	Contact point horizontal	0.55 N or less	Not applicable
	Contact point upwards	0.45 N or less	Not applicable
Position detection method	Optical reflection type linear encoder		
Detectable operation speed	In normal measurement: 700 mm/sec; for peak detection: 120 mm/sec		
Mass of gage head	Approx. 370 g		
Contact point	Carbide tipped, Sφ3 mm (M2.5 (P=0.45) x5 mm), standard contact point: 901312		
Stem	φ15 mm		
Bearing	Linear ball type		
Output cable length	Approx. 2 m		
Operating temperature (humidity) ranges	0 to 40 °C (Reference temperature 20 °C)/20 to 80% RH (non-condensing)		
Storage temperature (humidity) ranges	-10 to 60 °C/20 to 80% RH (non-condensing)		
Counter Specifications			
Display range	±999.99999 mm		
Functions	Zero-setting, presetting, direction changeover, tolerance judgment (3 steps/5 steps), RS-LINK		
Peak hold function	Yes		
Interface	RS-232C, USB (only for SENSORPAK), Digimatic (Printer: DP-1VA LOGGER)*3, I/O Connector		
External output	<ul style="list-style-type: none"> • 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, peak clear		
Power supply	Supplied AC Adapter, or 12 to 24 V DC, max. 700 mA		
Power consumption	8.4 W (max. 700 mA), ensure at least 1 A power supply per unit.		
Mass of counter	Approx. 900 g (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		

Order No.	Resolution 0.005 μm / Accuracy 0.1 μm model		
	542-720 (Standard)	542-721 (Low measuring force)	
Measuring range	10 mm		
Resolution	0.005 μm (0.01 μm, 0.05 μm, 0.1 μm can be selected from the counter)		
Measuring accuracy (20 °C)*1	0.1 μm		
Repeatability (20 °C)*1	0.02 μm (2 σ)		
Retrace error (20 °C)*1	0.05 μm		
Measuring force	Contact point downwards	0.65 N or less	Approx. 0.1 N
	Contact point horizontal	0.55 N or less	Not applicable
	Contact point upwards	0.45 N or less	Not applicable
Position detection method	Ultra-high accuracy transmission type linear encoder		
Detectable operation speed	In normal measurement: 250 mm/sec		
Mass of gage head	Approx. 370 g		
Contact point	Carbide sphere SR5 (M2.5 (P=0.45) x5 mm), standard contact point: 120058		
Stem	φ15 mm		
Bearing	Linear ball type		
Output cable length	Approx. 2 m		
Operating temperature (humidity) ranges	15 to 25 °C (Reference temperature 20 °C)/30 to 60% RH (non-condensing)		
Storage temperature (humidity) ranges	-10 to 60 °C/20 to 80% (non-condensing)*2		
Counter Specifications			
Display range	±99.999995 mm		
Functions	Zero-setting, presetting, direction changeover, tolerance judgment (3 steps/5 steps), RS-LINK		
Peak hold function	No		
Interface	RS-232C, USB (only for SENSORPAK), Digimatic (Printer: DP-1VA LOGGER)*3, I/O Connector		
External output	<ul style="list-style-type: none"> • 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		
Power supply	Supplied AC Adapter, or +12 to 24 V DC, max. 700 mA		
Power consumption	8.4 W (max. 700 mA), ensure at least 1 A power supply per unit.		
Mass of counter	Approx. 900 g (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.

*2 The storage temperature/humidity ranges after unpacking are the same as the operating temperature/humidity ranges.

*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.



Refer to the Linear Gage Brochure (E13007) for more details.