

**LG Series
Mechanical Force Gauges**

User Manual



Chatillon
force measurement

WARRANTY

This instrument is warranted against defects in workmanship, material and design for two (2) years from date of delivery to the extent that AMETEK will, at its sole option, repair or replace the instrument or any part thereof which is defective, provided, however, that this warranty shall not apply to instruments subjected to tampering or, abuse, or exposed to highly corrosive conditions.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES WHETHER EXPRESS OR IMPLIED AND AMETEK HEREBY DISCLAIMS ALL OTHER WARRANTIES, INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY. AMETEK SHALL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING, BUT NOT LIMITED TO, ANY ANTICIPATED OR LOST PROFITS.

This warranty is voidable if the purchaser fails to follow any and all instructions, warnings or cautions in the instrument's Instruction Manual.

If a manufacturing defect is found, AMETEK will replace or repair the instrument or replace any defective part thereof without charge; however, AMETEK's obligation hereunder does not include the cost of transportation, which must be borne by the customer. AMETEK assumes no responsibility for damage in transit, and any claims for such damage should be presented to the carrier by the purchaser.

TRADEMARKS

AMETEK is a registered trademarks of AMETEK, Inc.

CHATILLON is a registered trademark of AMETEK, Inc.

Other trademarks are the property of their respective owners.

ICONS



WARNING

The raised hand icon warns of a situation or condition that may lead to personal injury or death. Do not proceed until the warning is read and thoroughly understood. Warning messages are shown in bold type.



DANGEROUS VOLTAGE

The lightning icon warns of the presence of an uninsulated dangerous voltage within the product enclosure that might be of sufficient magnitude to cause serious shocks or death. Never open the enclosures unless you are an authorized and qualified CHATILLON service personnel. Never open any enclosure when power is connected to the system or its components.



CAUTION

The exclamation point icon indicates a situation or condition that may lead to equipment malfunction or damage. Do not proceed until the caution message is read and thoroughly understood. Caution messages are shown in bold type.



NOTE

The note icon indicates additional or supplementary information about the action, activity or concept. Notes are shown in bold type.

CAUTION

HIGH FORCES ARE OFTEN INVOLVED WITH THE MATERIAL TESTING PROCESSES.

IF THE EQUIPMENT IS USED IN A MANNER NOT SPECIFIED BY THE MANUFACTURER, THE PROTECTION PROVIDED BY THE EQUIPMENT MAY BE IMPAIRED.

TO MAINTAIN ALL ASPECTS OF THE SPECIFICATION, ONLY AMETEK APPROVED ACCESSORIES, CONNECTIONS AND COMPONENTS SHOULD BE USED.

STRICTLY ADHERE TO ALL SPECIFIED SAFETY PROCEDURES

READ THIS MANUAL BEFORE USING THIS PRODUCT.

General Safety

General safety precautions must be followed when using this CHATILLON product. Failure to observe precautions and warnings may result in damage to the equipment, or injury to personnel.

It is understood that safety rules within companies vary. If a conflict exists between the material contained in all CHATILLON User's Guides and the rules of a company using a CHATILLON product, the more stringent rules should take precedence.

Safety Considerations

The LG Series is completely enclosed and provides no potentially hazardous outputs.

Mechanical components housed within the LG Series covers are to be serviced by authorized CHATILLON representatives only.



When designing a custom fixture ensure the load rating of the custom fixture exceeds the load rating of the force gauge. i.e. If the load rating of the force gauge is 100 LBF the custom fixture should have a load rating greater than 100 LBF

INTRODUCTION

The LG Series mechanical force gauge is ideal for a wide range of force testing applications. Based on our popular DPP Series force gauge, the LG Series features a larger, 2.25-inch dial for improved resolution and readability, peak hold button, ergonomic shape and improved accuracy of $\pm 0.5\%$ of full scale. The LG gauge is an excellent, economical solution for tensile or compression testing.

The durable, plastic housing fits naturally in the hand for a comfortable and firm grip even at maximum loads. Gauges may be mounted to a test stand for even greater control and consistent results in repetitive testing applications. Easy to read concentric dial measures clockwise direction only. Dial rotates 360-degrees for taring. A peak hold button captures peak readings. Available in lbf, kgf or N units of measure. LG Series gauges come complete with protective carrying case and a set of stainless steel attachments. A Certificate of Calibration with Data is supplied standard.

OPERATION

The zero point of the gauge may not always be in the 12 o'clock position due to gravity effects and the weight of fixtures or grips on the force gauge shaft. To zero the gauge, rotate the bezel on the dial indicator so that the indicator pointer lines up with the zero on the dial face. On the lighter model force gauges (5 LBF, 2KGF, 20N or less), gently tap the gauge to overcome static friction when taking readings.

Gauges are designed for axial loading. Ensure the load is not applied at an angle or an error can be introduced in the force readings. The gauges are designed to have a 10% tare for fixtures and grips. If this 10% tare is exceeded, the force gauge may not measure up to full scale.

COMPRESSION TESTING

For compression testing, assemble the appropriate attachment or grip to the bottom shaft of the force gauge. For compression testing the shaft should be pushed into the gauge, causing the indicator to rotate in the clockwise direction. Attachments should be applied "finger-tight". Do NOT over-tighten.



TENSILE TESTING

For tension testing, assemble the appropriate hook, attachment or grip to the top shaft of the force gauge. For tension testing the shaft should be pulled out of the top of the force gauge, causing the indicator to rotate in the clockwise direction. Attachments should be applied "finger-tight". Do NOT overtighten.



CAUTION: NEVER apply a load to the LG Series force gauge so the indicator rotates in the counterclockwise direction. If excessive loads are applied in the counterclockwise direction, damage may occur to the force gauge.



CAUTION: The LG Series is a unidirectional force gauge. When applying a load to the instrument the dial indicator MUST rotate in the clockwise direction.

PEAK HOLD

The LG Series force gauge has a maximum hold feature. This allows the peak force to be held after the load is removed.

ACTIVATE PEAK HOLD

To activate this feature, rotate the knob to “MAX ON” position.

RESET PEAK HOLD

To reset the reading, simply rotate the switch to “MAX OFF” and then return back to “MAX ON” position. To deactivate this feature, rotate the knob to the “MAX OFF” position.



TEST STAND MOUNTING

The LG Series force gauge has two #10-32 female threads for mounting to CHATILLON test stands. Ensure the #10-32 screws are not too long, otherwise it may bind and damage the force gauge.

Test Stand Adapters

Item No.	Fits Tester
SPK-MT-0005	MT150, MT500
SPK-LG-TT	TT Testers

The screw thread length going into the back of the gauge should not exceed 3/8 inch.

The force gauge also has four M3 x 0.5 threaded holes for alternative mounting.

MAINTENANCE

Gauge accuracy should be checked periodically to ensure the gauge is within its calibration limits. The calibration can be verified by applying known weights (adjusted for local gravity) to the extension hook. If adjustment is required, the gauge should be returned to AMETEK for calibration.

SPECIFICATIONS

Accuracy:	±0.5% of Full Scale
Overload Capacity:	110% of Rated Capacity
Maximum Overload:	150% of Rated Capacity
Tare Capacity:	10% of Rated Capacity
Dial Resolution:	0.5% of Full Scale
Deflection:	10mm (.394 inches) at Full Scale
Operating Temperature:	+40°F to +110°F (+5°C to +45°C)
Instrument Weight:	1.5 lbs (0.67 kg)
Shipping Weight with case:	3.5 lbs (1.59 kg)
Warranty:	2 Years

ORDERING

Decimal Dials - LBF

Model	Capacity
LG-002	2 x 0.01 lbf
LG-005	5 x 0.025 lbf
LG-010	10 x 0.05 lbf
LG-020	20 x 0.1 lbf
LG-030	30 x 0.15 lbf
LG-050	50 x 0.25 lbf
LG-075	75 x 0.375 lbf
LG-100	100 x 0.5 lbf
LG-1KG	1 x 0.005 kgf
LG-2KG	2 x 0.01 kgf

Metric Dials - KGF

Model	Capacity
LG-3KG	3 x 0.015 kgf
LG-5KG	5 x 0.025 kgf
LG-10KG	10 x 0.05 kgf
LG-20KG	20 x 0.1 kgf
LG-30KG	30 x 0.15 kgf
LG-50KG	50 x 0.25 kgf
LG-10N	10 x 0.05 N
LG-20N	20 x 0.1 N
LG-30N	30 x 0.15 N
LG-50N	50 x 0.25 N

S.I. Dials - N

Model	Capacity
LG-100N	2 x 0.01 lbf
LG-200N	5 x 0.025 lbf
LG-300N	10 x 0.05 lbf
LG-500N	20 x 0.1 lbf

Accessories

Item No.	Description
SPK-FMG-008A	Adapter, Chisel Point
SPK-FMG-009A	Adapter, Point
SPK-FMG-010A	Adapter, Notch
SPK-FMG-011A	Adapter, Flat
SPK-FMG-012A ¹	Hook, stationary, 50 lbf
SPK-FMG-012B ¹	Hook, stationary, 100 lbf
SPK-FMG-013A	Extension Rod, 6"
NC002710	Carrying Case
NC00002711	Operator's manual
ML3867 ²	Hook, Swivel, 20 lbf
ML3850 ²	Hook, Swivel, 100 lbf
NC000988-3 ²	Extension Rod, 3"

Note: 1) Capacity dependent
2) Optional accessories

SPARE PARTS LIST

Description	Item No.
Dial Indicator Assembly, LG-002	NC002677-01
Dial Indicator Assembly, LG-005	NC002677-02
Dial Indicator Assembly, LG-010	NC002677-03
Dial Indicator Assembly, LG-020	NC002677-04
Dial Indicator Assembly, LG-030	NC002677-05
Dial Indicator Assembly, LG-050	NC002677-06
Dial Indicator Assembly, LG-075	NC002677-07
Dial Indicator Assembly, LG-100	NC002677-08
Dial Indicator Assembly, LG-1KG	NC002677-13
Dial Indicator Assembly, LG-2KG	NC002677-14
Dial Indicator Assembly, LG-3KG	NC002677-15
Dial Indicator Assembly, LG-5KG	NC002677-16
Dial Indicator Assembly, LG-10KG	NC002677-17
Dial Indicator Assembly, LG-20KG	NC002677-18
Dial Indicator Assembly, LG-30KG	NC002677-19
Dial Indicator Assembly, LG-50KG	NC002677-20

Description	Item No.
Dial Indicator Assembly, LG-10N	NC002677-24
Dial Indicator Assembly, LG-20N	NC002677-25
Dial Indicator Assembly, LG-30N	NC002677-26
Dial Indicator Assembly, LG-50N	NC002677-27
Dial Indicator Assembly, LG-100N	NC002677-28
Dial Indicator Assembly, LG-200N	NC002677-29
Dial Indicator Assembly, LG-300N	NC002677-30
Dial Indicator Assembly, LG-500N	NC002677-31
Bezel, Dial Indicator	NC002716
Bearing Support Assembly	NC002715
Top Case (Housing)	NC002713
Bottom Case (Housing)	NC002714
Maximim Peak Hold Knob Assembly	NC002678
Gauge Mounting Plate	NC002671
Label, Gauge Model	NC002621
Ball Bushing	2630
Retaining Ring, Ball Bushing	13007

SPECIFICATION

