

32-1041 REV 0



The Series BG Digital Force Gauge is an advanced force measurement instrument, with sophisticated measurement capabilities, data outputs, computer control capabilities, and a long list of features and configurable settings.

## Specifications

Accuracy:	±0.2% of full scale ±1 digit
Sampling rate:	65 readings/s
Display rate:	2.5 updates/s in normal mode / 65 updates/s in peak mode
Power:	AC or rechargeable battery with Intelligent Power Management System (IPM), a 3-step system that warns the user via a "LO BAT" indicator and then powers off the gauge.
Battery life:	8-10 hours of continuous use
Selectable units of measurement:	lbF, N, kg/g (depending on model)
Outputs:	Standard
RS-232	Fully configurable up to 9600 baud. Includes Gauge Control Language (GCL) for full computer control of all functions.
Mitutoyo (Digimatic)	Serial BCD suitable for all Mitutoyo SPC-compatible devices
Analog	±1 VCD, ±0.25% of full scale at capacity. + for compression, - for tension.
General purpose I/O	Three open collector outputs and one input (utilizing Mitutoyo lines)
Set points	Three open collector lines (utilizing Mitutoyo lines)
Configurable settings:	Analog filter, digital filters, RS-232, outputs selection (other than RS-232), automatic output (RS-232), automatic shutoff, initial (default), averaging mode, calibration
Load cell deflection:	0.010 in [0.25 mm] at full capacity
Safe overload:	150% of full scale (display shows "----" at 110% and above)
Weight (gauge only):	BG012 - BG200: 0.95 lb [0.4 kg], BG500: 1.12 lb [0.5 kg]
Environmental requirements:	40° F - 100° F [5°C - 45°C], <96% humidity (non-condensating)
Thermal effects:	Zero: 0.03% of full scale/°C, Span: 0.01% of full scale/°C
Housing construction:	Aluminum
Included accessories:	Chisel, cone, V-groove, hook, flat, extension
Warranty	3 years (see individual statement for further details)

## Features

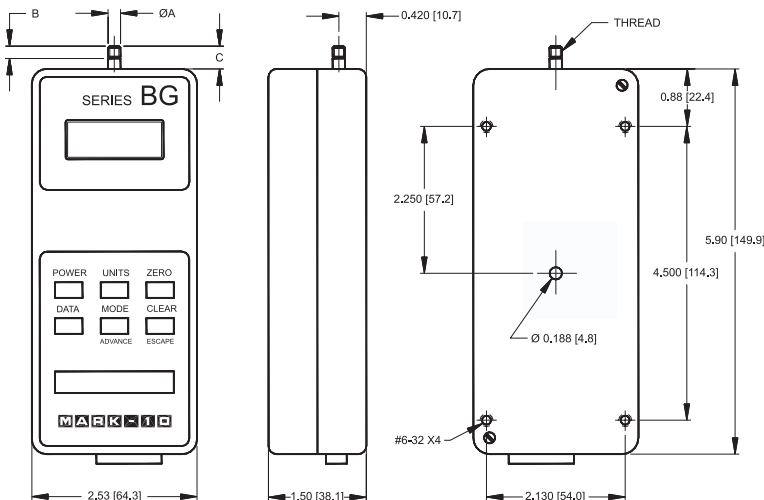
Data outputs	RS-232, Mitutoyo (Digimatic), and analog outputs. Automatic timed output (RS-232) included.
Set points	Programmable high and low force set points for triggering external devices (ex. motorized test stand, alarm, etc).
Data averaging	Calculates average force over a specified time (programmable)
External trigger	Useful for contact or switch activation force testing and data capture
Reversible housing	Housing can be reversed for handheld or test stand use

## Optional Equipment

Output cables	Various data output cables are available
Hi / lo limits indicator 11-1022	Set limit conditions for a test - the indicator will display red lights for high and low limits, and a green light to indicate passing.
Overload protection module 11-1042	Protects the force gauge against overloads during motorized tests. Adjustable from 10% to 150% of gauge's full capacity. For use with motorized test stands.
Set point cable 09-1090	Stops test stand travel at programmable high and low set points for tension and compression forces. For use with motorized test stands.

## Dimensions

in [mm]



	BG012 - BG200	BG500
ØA	0.200 [5.8]	0.312 [7.9]
B	0.19 [4.8]	0.44 [11.2]
C	0.35 [8.9]	0.31 [7.9]
Thread	#10-32	5/16-18

## Ordering Information

Model No.	Capacity x Resolution
BG012	0.12 x 0.00005 lbF, 50 x 0.02 gF, 0.5 x 0.0002 N, 110V
BG025	0.25 x 0.0001 lbF, 100.00 x 0.05 gF, 1 x 0.0005 N, 110V
BG05	0.5 x 0.0002 lbF, 250 x 0.1 gF, 2.5 x 0.001 N, 110V
BG2	2 x 0.001 lbF, 1 x 0.0005 kgF, 10 x 0.005 N, 110V
BG5	5 x 0.002 lbF, 2.5 x 0.001 kgF, 25 x 0.01 N, 110V
BG10	10 x 0.005 lbF, 5 x 0.002 kgF, 50 x 0.02 N, 110V
BG20	20 x 0.01 lbF, 10 x 0.005 kgF, 100 x 0.05 N, 110V
BG50	50 x 0.02 lbF, 25 x 0.01 kgF, 250 x 0.1 N, 110V
BG100	100 x 0.05 lbF, 50 x 0.02 kgF, 500 x 0.2 N, 110V
BG200	200 x 0.1 lbF, 100 x 0.05 kgF, 1000 x 0.5 N, 110V
BG500	500 x 0.2 lbF, 250 x 0.1 kgF, 2500 x 1 N, 110V

For 220V operation, add suffix E to model number. Example: BG10E

The innovative BGI Universal Force / Torque Gauge is the ultimate in force and torque measurement flexibility. With all the features of the Series BG, coupled with compatibility with a wide selection of interchangeable force and torque sensors, the BGI is a versatile solution for many force and torque testing applications. All sensors are fully interchangeable and do not require additional configuration or calibration.

### Series STJ

Universal torque sensors, fixed chuck



### Series STH

Universal torque sensors, interchangeable attachments



### Series STE

Wrench extension torque sensors



### Series STC

Static torque sensors



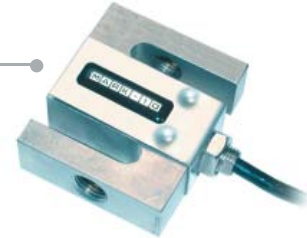
### Series STB

Closure torque sensors



### Series SS

Tension / compression sensors



### Series SSM

Inline tension / compression sensors



### Series SJR

Miniature tension / compression sensors



### Series SBC

Compact compression sensors



### Series SHP

Ergonomics testing push / pull sensors



» Sensor specifications provided on following pages



## BGI Specifications

Accuracy:	±0.1% of full scale ±1 digit + sensor
Sampling rate:	65 readings/s
Display rate:	2.5 updates/s in normal mode / 65 updates/s in peak mode
Power:	AC or rechargeable battery with Intelligent Power Management System (IPM), a 3-step system that warns the user via a "LO BAT" indicator and then powers off the gauge.
Battery life:	8-10 hours of continuous use
Selectable units of measurement:	lb, kg, g, N, ozin, lbFin, kgFmm, kgFm, Ncm, Nm (depending on sensor)
Outputs:	Standard
RS-232	Fully configurable up to 9600 baud. Includes Gauge Control Language (GCL) for full computer control of all functions.
Mitutoyo (Digimatic)	Serial BCD suitable for all Mitutoyo SPC-compatible devices
Analog	±1 VCD, ±0.25% of full scale at capacity. + CW, - for CCW.
General purpose I/O	Three open collector outputs and one input (utilizing Mitutoyo lines)
Set points	Three open collector lines (utilizing Mitutoyo lines)
Configurable settings:	Analog filters, digital filters, RS-232, outputs selection (other than RS-232), automatic output (RS-232), automatic shutoff, initial (default), averaging mode, calibration
Weight (gauge only):	0.9 lb [0.4 kg]
Environmental requirements:	40° F - 100° F [5° C - 45° C], <96% humidity (non-condensating)
Thermal effects:	Zero: 0.03% of full scale/°C, Span: 0.01% of full scale/°C for all remote sensors
Housing construction:	Aluminum
Warranty	3 years (see individual statement for further details)

## Features

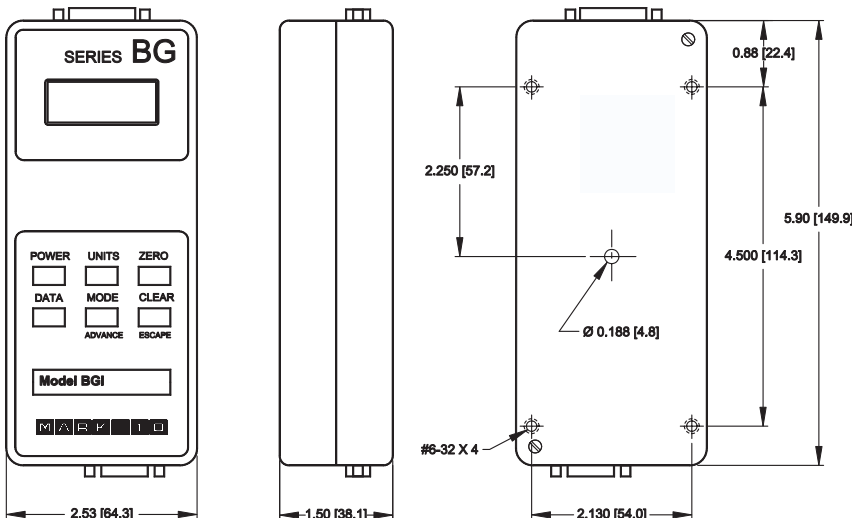
Interchangeable remote force & torque sensors	
Data outputs	RS-232, Mitutoyo (Digimatic), and analog outputs. Automatic timed output (RS-232) included.
Set points	Programmable high and low force set points for triggering external devices (ex. motorized test stand, alarm, etc).
Data averaging	Calculates average force over a specified time (programmable)
External trigger	Useful for contact or switch activation force testing and data capture

## Optional Equipment

Output cables	Various data output cables are available
Hi / lo limits indicator 11-1022	Set limit conditions for a test - the indicator will display red lights for high and low limits, and a green light to indicate passing.
Overload protection module 11-1042	Protects the remote sensor against overloads during motorized tests, adjustable from 10 - 150% of the sensor's full capacity. For use with motorized test stands.
Set point cable 09-1090	Stops test stand motion at programmable high and low set points for tension and compression or CW and CCW. For use with motorized test stands.
Test stand mounting kit AC1004	Allows the BGI to be mounted to TS-Series force or torque test stand
Tabletop stand AC1008	Includes gauge mounting screws, and holes for mounting to a workbench. Display angle can be adjusted.

## Dimensions

in [mm]



## Ordering Information

Model No.	Description
BGI	Universal Force / Torque Gauge, 110V
BGIE	Universal Force / Torque Gauge, 220V

The BGI and all sensors are supplied with an NIST-traceable certificate of calibration

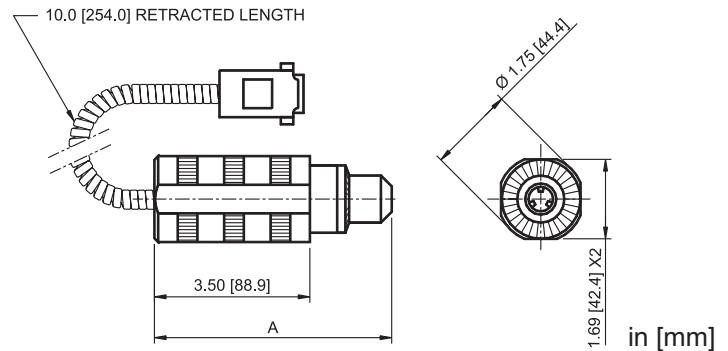
## Universal Torque Sensors Series STJ



Measure bi-directional torque for a wide variety of applications. Contains a chuck for up to 1/2" diameter samples. The sensor can be used as a hand held device, or mounted to a test stand. Capacities available from 10 ozFin to 100 lbFin.

### Specifications

Chuck capacity: STJ10Z - STJ50Z: 0.38 in [9.5 mm]  
 STJ12 - STJ100: 0.5 in [12.7 mm]  
 Accuracy: ±0.35% of full scale + BGI  
 Safe overload: STJ10Z - STJ50Z: 300% of full scale  
 STJ12 - STJ50: 150% of full scale  
 Weight: 1.4 lb [0.6 kg]



Model No.	A
STJ10Z - STJ50Z	4.82 [122.4]
STJ12 - STJ100	5.19 [131.8]

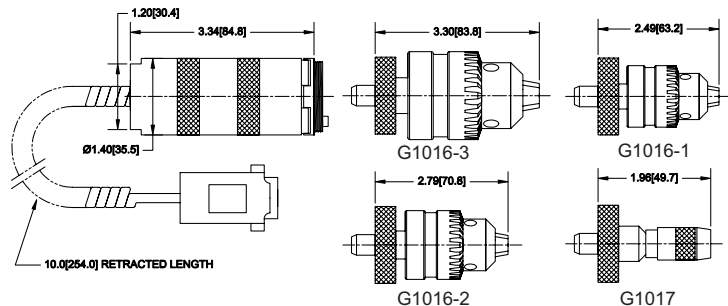
### Ordering Information

Model No.	Capacity x resolution
STJ10Z	10 x 0.01 ozFin, 7 x 0.005 kgFmm, 7 x 0.005 Ncm
STJ20Z	20 x 0.02 ozFin, 14 x 0.01 kgFmm, 14 x 0.01 Ncm
STJ50Z	50 x 0.05 ozFin, 36 x 0.05 kgFmm, 35 x 0.05 Ncm
STJ12	12 x 0.01 lbFin, 140 x 0.1 kgFmm, 135 x 0.1 Ncm
STJ50	50 x 0.05 lbFin, 580 x 0.5kgFmm, 570 x 0.5 Ncm
STJ100	100 x 0.1 lbFin, 1150 x 1 kgFmm, 1150 x 1 Ncm

## Universal Torque Sensors Series STH



A great solution for general bi-directional torque testing applications with several different sample sizes. Three interchangeable chuck capacities and bit holder are available. The STH has superb overload protection and is available in capacities from 10 ozFin to 100 lbFin.



in [mm]

### Specifications

Chuck and bit capacities: G1016-1: 0.028 - 0.25 in [0.7 - 6.3 mm]  
 G1016-2: 0.062 - 0.375 in [1.6 - 9.5 mm]  
 G1016-3: 0.078 - 0.5 in [2.0 - 12.7 mm]  
 G1017: 0.25 in [6.3 mm] hex  
 Accuracy: ±0.2% of full scale + BGI  
 Safe overload: STH10Z - STH20Z: 300% of full scale  
 STH12 - STH50: 200% of full scale  
 STH100: 150%  
 Weight: From 1.4 lb [0.6 kg]

### Ordering Information

Model No.	Capacity x resolution
STH10Z	10 x 0.01 ozin, 7 x 0.005 kgFmm, 7 x 0.005 Ncm
STH20Z	20 x 0.02 ozin, 14 x 0.01 kgFmm, 14 x 0.01 Ncm
STH50Z	50 x 0.05 ozin, 36 x 0.05 kgFmm, 35 x 0.05 Ncm
STH12	12 x 0.01 lbFin, 140 x 0.1 kgFmm, 135 x 0.1 Ncm
STH50	50 x 0.05 lbFin, 580 x 0.5 kgFmm, 570 x 0.5 Ncm
STH100	100 x 0.1 lbFin, 1150 x 1 kgFmm, 1150 x 1 Ncm
G1016-1	Jacobs chuck for STH, 0.028"-0.25"
G1016-2	Jacobs chuck for STH, 0.062"-0.375"
G1016-3	Jacobs chuck for STH, 0.078"-0.5"
G1017	Bit holder for STH, 1/4" hex

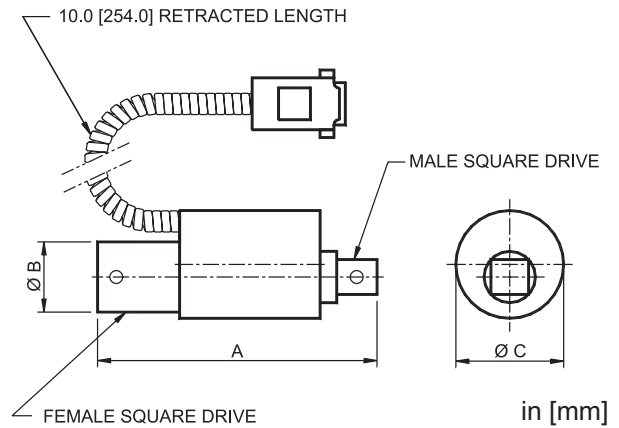
## Wrench Extension Torque Sensors Series STE



Convert any wrench to a torque tool with this sensor, or use it as a component of a torque testing system. Capacities available from 20 lbFin to 5,000 lbFin.

### Specifications

Accuracy:  $\pm 0.6\%$  of full scale + BGI  
 Safe overload: 150% of full scale  
 Weight: 0.6 - 2.0 lb [0.3 - 0.9 kg], depending on model



### Ordering Information

Model No.	Capacity x resolution
STE20	20 x 0.02 lbFin, 230 x 0.2 kgFmm, 220 x 0.2 Ncm
STE50	50 x 0.05 lbFin, 580 x 0.5 kgFmm, 570 x 0.5 Ncm
STE100	100 x 0.1 lbFin, 1150 x 1 kgFmm, 1150 x 1 Ncm
STE200	200 x 0.2 lbFin, 2300 x 2 kgFmm, 2200 x 2 Ncm
STE400	400 x 0.5 lbFin, 4600 x 5 kgFmm, 4500 x 5 Ncm
STE1000	1000 x 1 lbFin, 11500 x 10 kgFmm, 11000 x 10 Ncm
STE5000	5000 x 5 lbFin, 55 x 0.05 kgFm, 550 x 0.5 Nm

Model No.	A	ØB	ØC	Drive Size
STE20 - STE100	1.88 [47.8]	0.56 [14.2]	1.00 [25.4]	1/4"
STE200 - STE400	3.00 [76.2]	0.73 [18.5]	1.12 [28.6]	3/8"
STE1000	3.50 [88.9]	0.98 [24.9]	1.25 [31.8]	1/2"
STE5000	5.00 [127.0]	1.48 [37.6]	2.0 [50.8]	3/4"

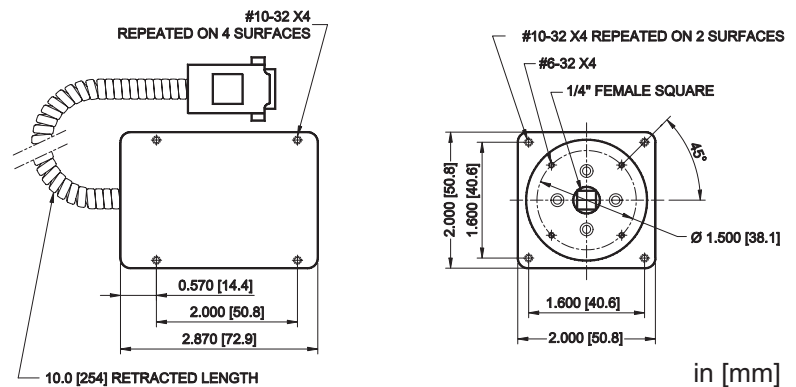
## Static Torque Sensors Series STC



Calibrate torque tools, or use it as a component of a torque testing system. Tapped holes on every surface allow for easy mounting to a work bench or fixture. Capacities available from 10 ozFin to 100 lbFin.

### Specifications

Accuracy:  $\pm 0.35\%$  of full scale + BGI  
 Safe overload: STC10Z - STC50Z: 300% of full scale  
 STC12 - STC100: 150% of full scale  
 Weight: 1.2 lb [0.5 kg]



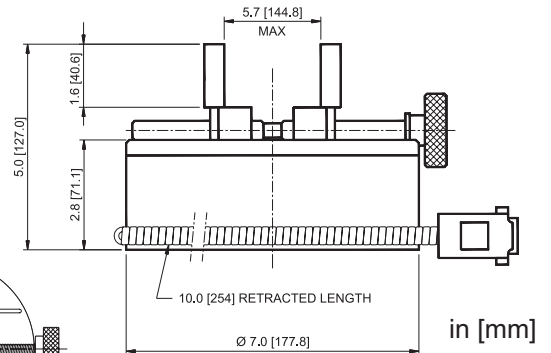
### Ordering Information

Model No.	Capacity x resolution
STC10Z	10 x 0.01 ozFin, 7 x 0.005 kgFmm, 7 x 0.005 Ncm
STC20Z	20 x 0.02 ozFin, 14 x 0.01 kgFmm, 14 x 0.01 Ncm
STC50Z	50 x 0.05 ozFin, 36 x 0.05 kgFmm, 35 x 0.05 Ncm
STC12	12 x 0.01 lbFin, 140 x 0.1 kgFmm, 135 x 0.1 Ncm
STC50	50 x 0.05 lbFin, 580 x 0.5 kgFmm, 570 x 0.5 Ncm
STC100	100 x 0.1 lbFin, 1150 x 1 kgFmm, 1150 x 1 Ncm

## Closure Torque Sensors Series STB



Ideal for testing torque on bottle caps and containers. Reversible jaws or movable posts, depending on model, effectively accommodate a variety of shapes and sizes. Capacities available from 10 ozFin to 100 lbFin.



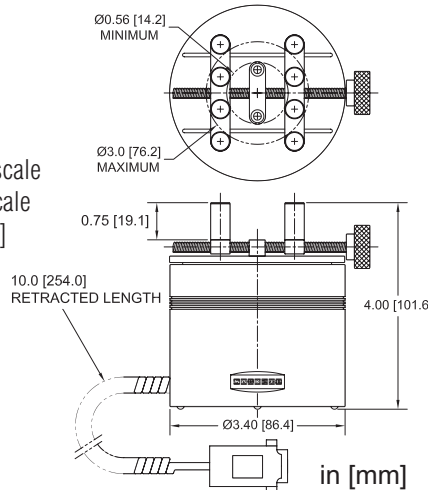
STB12 - STB100

### Specifications

Accuracy: ±0.7% of full scale + BGI  
 Safe overload: STB10Z - STB50Z: 300% of full scale  
 STB12 - STB100: 150% of full scale  
 Weight: STB10Z - STB50Z: 2.2 lb [1.0 kg]  
 STB12 - STB100: 5.4 lb [2.5 kg]

### Ordering Information

Model No.	Capacity x resolution
STB10Z	10 x 0.01 ozFin, 7 x 0.005 kgFmm, 7 x 0.005 Ncm
STB20Z	20 x 0.02 ozFin, 14 x 0.01 kgFmm, 14 x 0.01 Ncm
STB50Z	50 x 0.05 ozFin, 36 x 0.05 kgFmm, 35 x 0.05 Ncm
STB12	12 x 0.01 lbFin, 140 x 0.1 kgFmm, 135 x 0.1 Ncm
STB50	50 x 0.05 lbFin, 580 x 0.5 kgFmm, 570.0 x 0.5 Ncm
STB100	100 x 0.1 lbFin, 1150 x 1 kgFmm, 1150 x 1 Ncm

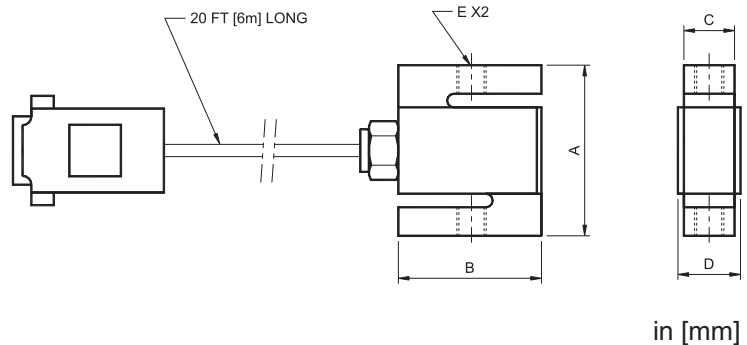


STB10Z - STB50Z

## Tension / Compression Sensors Series SS



A rugged sensor for measuring tensile and compressive force of up to 10,000 lbF. Durable S-Beam design with threaded holes on two sides allows for many applications and setups. Steel construction ensures many years of use.



in [mm]

### Specifications

Accuracy: ±0.15% of full scale + BGI  
 Safe overload: 150% of full scale  
 Weight: From 1.9 - 3.0 lb [0.9 - 1.4 kg]

### Ordering Information

Model No.	Capacity x resolution
SS50	50 x 0.02 lbF, 25 x 0.01 kgF, 250 x 0.1 N
SS100	100 x 0.05 lbF, 50 x 0.02 kgF, 500 x 0.2 N
SS200	200 x 0.1 lbF, 100 x 0.05 kgF, 1000 x 0.5 N
SS500	500 x 0.2 lbF, 250 x 0.1 kgF, 2500 x 1 N
SS1000	1000 x 0.5 lbF, 500 x 0.2 kgF, 5000 x 2 N
SS2000	2000 x 1 lbF, 1000 x 0.5 kgF, 10000 x 5 N
SS5000	5000 x 2 lbF, 2500 x 1 kgF, 25 x 0.01 kN
SS10000	10000 x 5 lbF, 5000 x 2 kgF, 50 x 0.02 kN

Model No.	A	B	C	D	E
SS50	2.40 [61.0]	2.00 [50.8]	0.46 [11.7]	0.65 [16.5]	1/4-28 UNF
SS100			0.71 [18.0]	0.90 [22.9]	1/2-20 UNF
SS200					
SS500					
SS1000	3.90 [99.1]	3.00 [76.2]	0.96 [24.4]	1.15 [29.2]	3/4-16 UNF
SS2000					
SS5000					
SS10000					

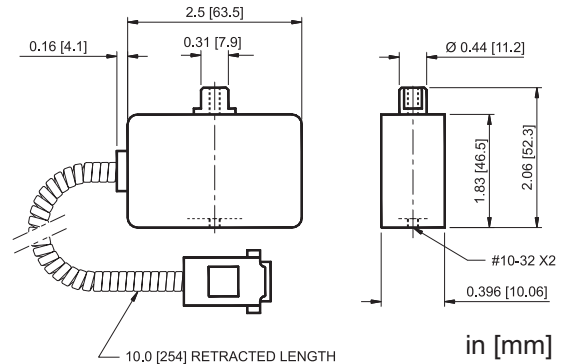
## Inline Tension / Compression Sensors Series SSM



Measures tensile and compressive loads for a wide variety of applications, available in capacities from 0.25 lbF to 100 lbF. Threaded holes on two sides can accept a variety of hooks and implements, making this sensor particularly well suited for inline tests.

### Specifications

Accuracy:  $\pm 0.15\%$  of full scale + BGI  
 Safe overload: SSM025 - SSM2: 200% of full scale  
 SSM5 - SSM100: 150% of full scale  
 Weight: 0.4 lb [0.2 kg]



### Ordering Information

Model No.	Capacity x resolution
SSM025	0.25 X 0.0001 lbF, 100 x 0.05 gF, 1 x 0.0005 N
SSM05	0.5 x 0.0002 lbF, 250 x 0.1 gF, 2.5 x 0.001 N
SSM2	2 x 0.001 lbF, 1 x 0.0005 kgF, 10 x 0.005 N
SSM5	5 x 0.002 lbF, 2.5 x 0.001 kgF, 25 x 0.001 N
SSM10	10 x .005 lbF, 5 x 0.002 kgF, 50 x 0.02 N
SSM20	20 x 0.01 lbF, 10 x 0.005 kgF, 100 x 0.05 N
SSM50	50 x 0.02 lbF, 25 x 0.01 kgF, 250 x 0.1 N
SSM100	100 x 0.05 lbF, 50 x 0.02 kgF, 500 x 0.2 N

## Miniature Tension / Compression Sensors Series SJR



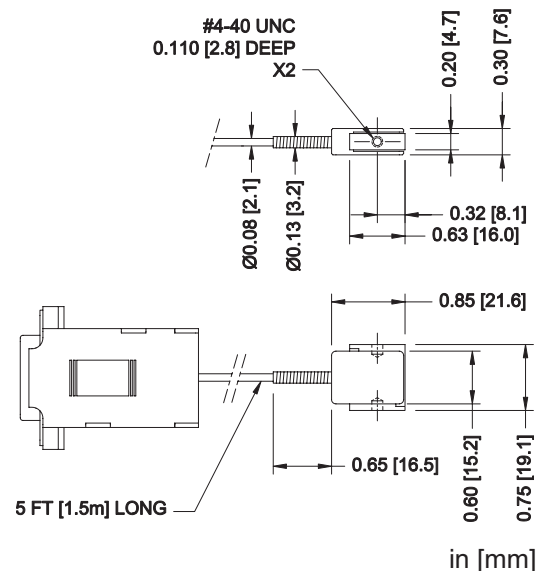
Extremely compact force measurement sensor for tensile and compressive loads in applications with limited space. Capacities available from 0.25 lb to 100 lbF. The sensors include threaded holes on two sides for the mounting of attachments or implements.

### Specifications

Accuracy:  $\pm 0.2\%$  of full scale + BGI  
 Safe overload: 200% of full scale  
 Weight: 0.015 lb [0.007 kg]

### Ordering Information

Model No.	Capacity x resolution
SJR025	0.25 X 0.0001 lbF, 100 x 0.05 gF, 1 x 0.0005 N
SJR05	0.5 x 0.0002 lbF, 250 x 0.1 gF, 2.5 x 0.001 N
SJR2	2 x 0.001 lbF, 1 x 0.0005 kgF, 10 x 0.005 N
SJR5	5 x 0.002 lbF, 2.5 x 0.001 kgF, 25 x 0.001 N
SJR10	10 x .005 lbF, 5 x 0.002 kgF, 50 x 0.02 N
SJR20	20 x 0.01 lbF, 10 x 0.005 kgF, 100 x 0.05 N
SJR50	50 x 0.02 lbF, 25 x 0.01 kgF, 250 x 0.1 N
SJR100	100 x 0.05 lbF, 50 x 0.02 kgF, 500 x 0.2 N



## Compact Compression Sensors Series SBC



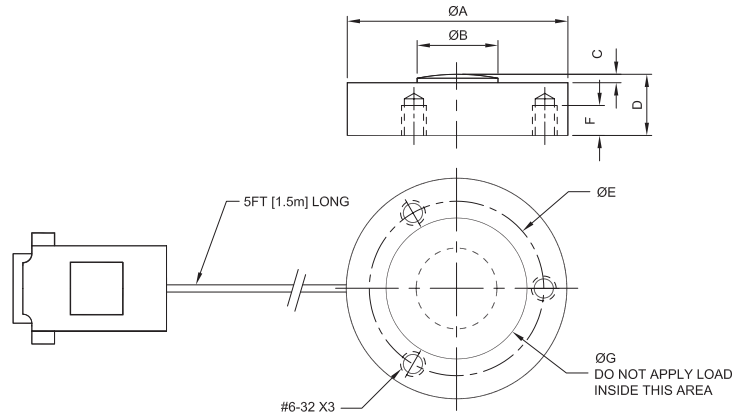
Button type sensor for compressive loads of up to 10,000 lbF. Compact and rugged, the SBC is ideal for heavy duty applications with space constraints.

### Specifications

Accuracy: ±0.5% of full scale + BGI  
 Safe overload: 150% of full scale  
 Weight: From 0.4 lb [0.2 kg]

### Ordering Information

Model No.	Capacity x resolution
SBC100	100 x 0.05 lbF, 50 x 0.02 kgF, 500 x 0.2 N
SBC200	200 x 0.1 lbF, 100 x 0.05 kgF, 1000 x 0.5 N
SBC500	500 x 0.2 lbF, 250 x 0.1 kgF, 2500 x 1 N
SBC1000	1000 x 0.5 lbF, 500 x 0.2 kgF, 5000 x 2 N
SBC2000	2000 x 1 lbF, 1000 x 0.5 kgF, 10000 x 5 N
SBC5000	5000 x 2 lbF, 2500 x 1 kgF, 25 x 0.01 kN
SBC10000	10000 x 5 lbF, 5000 x 2 kgF, 50 x 0.02 kN



in [mm]

Model No.	ØA	ØB	C	D	ØE	F	ØG
SBC100 - SBC2000	1.23 [31.3]	0.32 [8.1]	0.05 [1.3]	0.39 [9.9]	1.0 [25.4]	THRU	0.83 [21.1]
SBC5000 - SBC10000	1.48 [37.6]	0.43 [10.9]	0.07 [1.8]	0.62 [15.8]	1.25 [31.8]	0.25 [6.4]	1.08 [27.4]

## Pull / Push Sensors Series SHP



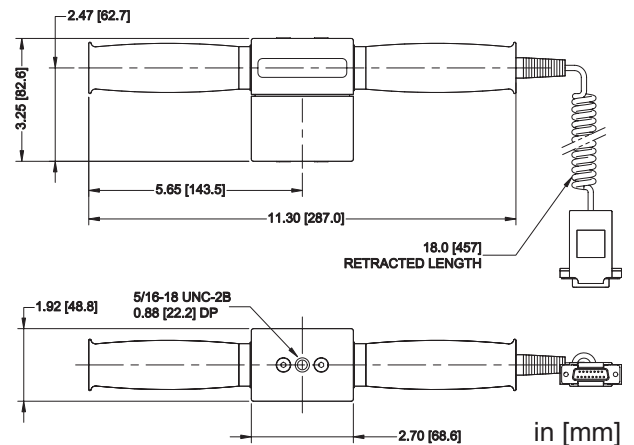
Fully enclosed sensor for pull / push testing. Useful in ergonomics testing, workplace safety testing, and general lifting or push/pull requirements. For up to 500 lbF of force.

### Specifications

Accuracy: ±0.15% of full scale + BGI  
 Safe overload: 150% of full scale

### Ordering Information

Model No.	Capacity x resolution
SHP500	500 x 0.2 lbF, 250 x 0.1 kgF, 2500 x 1 N



in [mm]

32-1043 REV 0



The Series EG is an ideal instrument for compression and tension applications requiring accuracy and flexibility up to 500 lbf. Features include selectable units of measurement, automatic peak memory, simple pushbutton calibration, programmable automatic shutoff, initial status of units and mode of operation, permanent configuration memory, and optional outputs (RS-232, Mitutoyo, and analog). Reversible aluminum housing allows for hand-held use or test stand mounting.

## Specifications

Accuracy:	±0.3% of full scale ±1 digit
Sampling rate:	30 readings/s
Display rate:	2.5 updates/s in normal mode / 30 updates/s in peak mode
Power:	AC or rechargeable battery with Intelligent Power Management System (IPM). IPM warns the user via a "LO BAT" indicator and then will power off the gauge
Battery life:	8-10 hours of continuous use
Selectable units of measurement:	lbf, N, kg/g (depending on model)
Outputs:	Optional
RS-232	Fully configurable up to 9600 baud
Mitutoyo (Digimatic)	Serial BCD suitable for all Mitutoyo SPC-compatible devices
Analog	±1 VDC, ±0.25% of full scale at capacity. + for compression, - for tension.
Configurable settings:	RS-232, Mitutoyo BCD, automatic shutoff, initial (default), calibration
Load cell deflection:	0.010 in [0.25 mm] at full capacity
Safe overload:	150% of full scale (display shows "----" at 110% and above)
Weight (gauge only):	EG012 - EG200: 0.95 lb [0.4 kg], EG500: 1.12 lb [0.5 kg]
Environmental requirements:	40°F - 100°F [5°C - 45°C], <96% humidity (non-condensating)
Thermal effects:	Zero: 0.03% of full scale/°C, Span: 0.01% of full scale/°C
Housing construction:	Aluminum
Included accessories:	Hook, flat

## Features

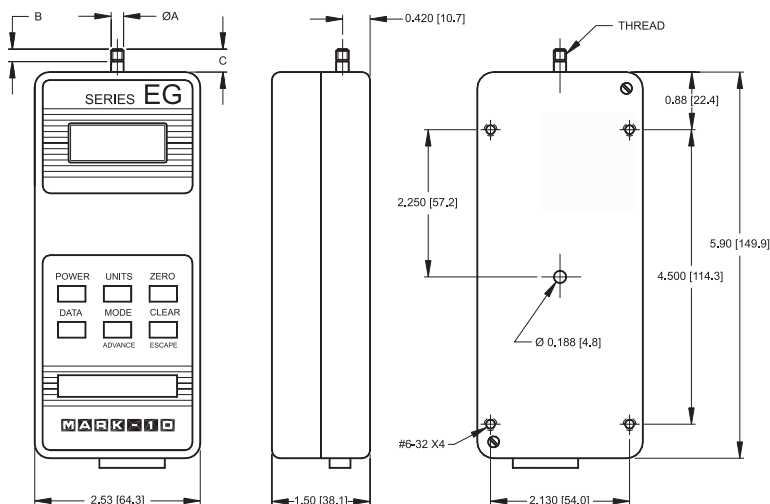
Data outputs	Optional RS-232, Mitutoyo (Digimatic), and analog outputs.
Push-button calibration	Simple and quick calibration procedure
Peak memory	For tension and compression
Selectable units of measurement	Measure in lbf, kg/g, or N (depending on model)
Customizable default configuration	Set filters, communications settings, measurement settings, mode of operation, and more

## Optional Equipment

Outputs package	RS-232, Mitutoyo (Digimatic), and analog outputs. Available at time of purchase or as an upgrade.
EGRS	
Output cables	Various data output cables are available
Overload protection module 11-1042	Protects the force gauge against overloads during motorized tests, adjustable from 10% to 150% of gauge's full capacity. For use with motorized test stands. Requires EGRS.

## Dimensions

in [mm]



	EG012 - EG200	EG500
ØA	0.200 [5.8]	0.312 [7.9]
B	0.19 [4.8]	0.44 [11.2]
C	0.35 [8.9]	0.31 [7.9]
Thread	#10-32	5/16-18

## Ordering Information

Model No.	Capacity x Resolution
EG012	0.12 x 0.0001 lbf, 50 x 0.05 gF, 0.5 x 0.0005 N, 110V
EG025	0.25 x 0.0001 lbf, 100 x 0.05 gF, 1 x 0.0005 N, 110V
EG05	0.5 x 0.0002 lbf, 250 x 0.1 gF, 2.5 x 0.001 N, 110V
EG2	2 x 0.001 lbf, 1 x 0.0005 kgF, 10 x 0.005 N, 110V
EG5	5 x 0.002 lbf, 2.5 x 0.001 kgF, 25 x 0.01 N, 110V
EG10	10 x 0.005 lbf, 5 x 0.002 kgF, 50 x 0.02 N, 110V
EG20	20 x 0.01 lbf, 10 x 0.005 kgF, 100 x 0.05 N, 110V
EG50	50 x 0.02 lbf, 25 x 0.01 kgF, 250 x 0.1 N, 110V
EG100	100 x 0.05 lbf, 50 x 0.02 kgF, 500 x 0.2 N, 110V
EG200	200 x 0.1 lbf, 100 x 0.05 kgF, 1000 x 0.5 N, 110V
EG500	500 x 0.2 lbf, 250 x 0.1 kgF, 2500 x 1 N, 110V

For 220V operation, add suffix E to model number. Example: EG50E

32-1044 REV 0



The Series MG Digital Force Gauge is an economical instrument for push and pull testing up to 500 lbF. A rugged reversible aluminum housing allows for hand-held use or test stand mounting. Three pushbuttons allow the user to easily select units of measurement, reset zero, and recall tensile and compressive peak loads. The MG is compatible with all Mark-10 force measurement test stands and gripping fixtures.

## Specifications

Accuracy:	±0.5% of full scale
Sampling rate:	30 readings/s
Display rate:	2.5 updates/s in normal operation / 30 updates/s in peak mode
Power:	AC or non-rechargeable 9V battery, with Intelligent Power Management System (IPM). IPM warns the user via a "LO BAT" indicator and then will power off the gauge.
Battery life:	30 hours of continuous use
Selectable units of measurement:	lbF, N, kg/g (depending on model)
Load cell deflection:	0.010 in [0.25 mm] at full capacity
Safe overload:	150% of full scale (display shows "----" at 110% and above)
Weight (gauge only):	MG012 - MG200: 0.7 lb [0.3 kg], MG500: 0.87 lb [0.4 kg]
Environmental requirements:	40° F - 100° F [5° C - 45° C], <96% humidity (non-condensating)
Thermal effects:	Zero: 0.03% of full scale/°C, Span: 0.01% of full scale/°C
Housing construction:	Aluminum
Included accessories:	Hook, flat
Warranty	3 years (see individual statement for further details)

## Features

Compact design	Portable and flexible in a wide range of applications
Push-button calibration	Simple and quick calibration procedure
Peak memory	For tension and compression
Selectable units of measurement	Measure in lbF, N, or kg/g (depending on model)
Reversible housing	Housing can be reversed for handheld or test stand use

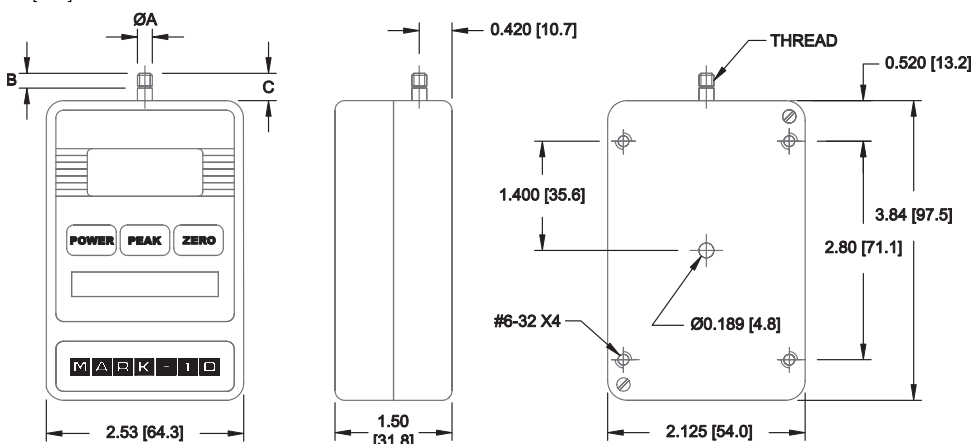
## Ordering Information

Model No.	Capacity x Resolution
MG012	0.12 x 0.0001 lbF, 50 x 0.05 gF, 0.5 x 0.0005 N, 110V
MG025	0.25 x 0.0001 lbF, 100.00 x 0.05 gF, 1 x 0.0005 N, 110V
MG05	0.5 x 0.0002 lbF, 250 x 0.1 gF, 2.5 x 0.001 N, 110V
MG2	2 x 0.001 lbF, 1 x 0.0005 kgF, 10 x 0.005 N, 110V
MG5	5 x 0.002 lbF, 2.5 x 0.001 kgF, 25 x 0.01 N, 110V
MG10	10 x 0.005 lbF, 5 x 0.002 kgF, 50 x 0.02 N, 110V
MG20	20 x 0.01 lbF, 10 x 0.005 kgF, 100 x 0.05 N, 110V
MG50	50 x 0.02 lbF, 25 x 0.01 kgF, 250 x 0.1 N, 110V
MG100	100 x 0.05 lbF, 50 x 0.02 kgF, 500 x 0.2 N, 110V
MG200	200 x 0.1 lbF, 100 x 0.05 kgF, 1000 x 0.5 N, 110V
MG500	500 x 0.2 lbF, 250 x 0.1 kgF, 2500 x 1 N, 110V

For 220V operation, add suffix E to model number. Example: MG100E

## Dimensions

in [mm]



	MG012 - MG200	MG500
ØA	0.200 [5.8]	0.312 [7.9]
B	0.19 [4.8]	0.44 [11.2]
C	0.35 [8.9]	0.60 [15.2]
Thread	#10-32	5/16-18

32-1045 REV 0



The rugged Series CG Digital Force Gauge is an advanced force measurement instrument for testing up to 1,000 lbf of compressive or tensile forces. The gauge includes all the features of Series BG gauges, including sophisticated measurement capabilities, data outputs, computer control capabilities, and configurable settings.

## Specifications

Accuracy:	±0.2% of full scale ±1 digit
Sampling rate:	65 readings/s
Display rate:	2.5 updates/s in normal operation / 65 updates/s in peak mode
Power:	AC or rechargeable battery with Intelligent Power Management System (IPM). IPM warns the user via a "LO BAT" indicator and then will power off the gauge
Battery life:	8-10 hours of continuous use
Selectable units of measurement:	lbf, kg, N
Outputs:	Standard
RS-232	Fully configurable up to 9600 baud. Includes Gauge Control Language (GCL) for full computer control of all functions.
Mitutoyo (Digimatic)	Serial BCD suitable for all Mitutoyo SPC-compatible devices
Analog	±1 VCD, ±0.25% of full scale at capacity. + for compression, - for tension.
General purpose I/O	Three open collector outputs and one input (utilizing Mitutoyo lines)
Set points	Three open collector lines (utilizing Mitutoyo lines)
Configurable settings:	Analog filters, digital filters, RS-232, outputs selection (other than RS-232), automatic output (RS-232), automatic shutoff, initial (default), averaging mode, calibration
Load cell deflection:	0.010 in [0.25 mm] at full capacity
Safe overload:	150% of full scale (display shows "----" at 110% and above)
Weight (gauge only):	1.8 lb [0.8 kg]
Environmental requirements:	40° F - 100° F [5° C - 45° C], <96% humidity (non-condensing)
Thermal effects:	Zero: 0.03% of full scale/°C, Span: 0.01% of full scale/°C
Housing construction:	Aluminum
Included accessories:	Chisel, cone, V-groove, hook, flat, extension, thread adapter
Warranty	3 years (see individual statement for further details)

## Features

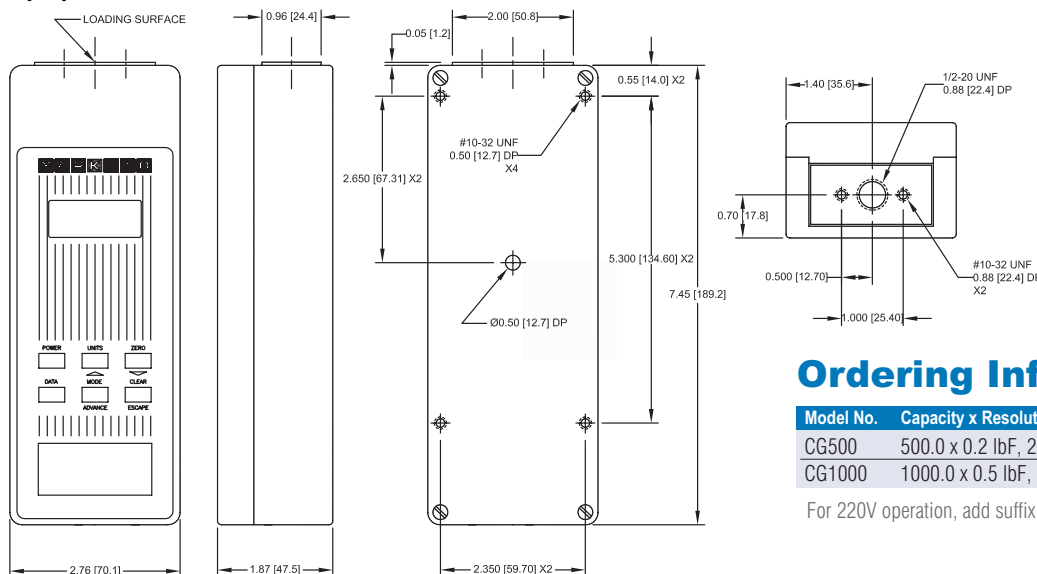
Data outputs	RS-232, Mitutoyo (Digimatic), and analog outputs. Automatic timed output (RS-232) included.
Set points	Programmable high and low force set points for triggering external devices (ex. motorized test stand, alarm, etc).
Data averaging	Calculates average force over a specified time (programmable)
External trigger	Useful for contact or switch activation force testing and data capture
Reversible housing	Housing can be reversed for handheld or test stand use

## Optional Equipment

Output cables	Various data output cables are available
Hi / lo limits indicator 11-1022	Set limit conditions for a test - the indicator will display red lights for high and low limits, and a green light to indicate passing.
Overload protection module 11-1042	Protects the force gauge against overloads during motorized tests, adjustable from 10 - 150% of gauge's full capacity. For use with the ESM motorized test stand.
Set point cable 09-1090	Stops test stand travel at programmable high and low set points for tension and compression forces. For use with motorized test stands.

## Dimensions

in [mm]



## Ordering Information

Model No.	Capacity x Resolution
CG500	500.0 x 0.2 lbf, 250.0 x 0.1 kgF, 2500 x 1 N, 100V
CG1000	1000.0 x 0.5 lbf, 500.0 x 0.2 kgF, 5000 x 2 N, 100V

For 220V operation, add suffix E to model number. Example: CG1000E

32-1046 REV 0



The MGT Torque Gauge is an economical solution for most basic torque measurement applications. A dedicated remote torque sensor with a Jacobs chuck can be used to grip a sample, bit, or fixture. The gauge's rugged reversible aluminum housing allows for hand-held use or test stand mounting. Three pushbuttons allow the user to easily select units of measurement, reset zero, and recall clockwise and counterclockwise peak torque values. The MGT is compatible with Mark-10 torque test stands, and is available in capacities from 10 ozFin to 100 lbFin.

## Specifications

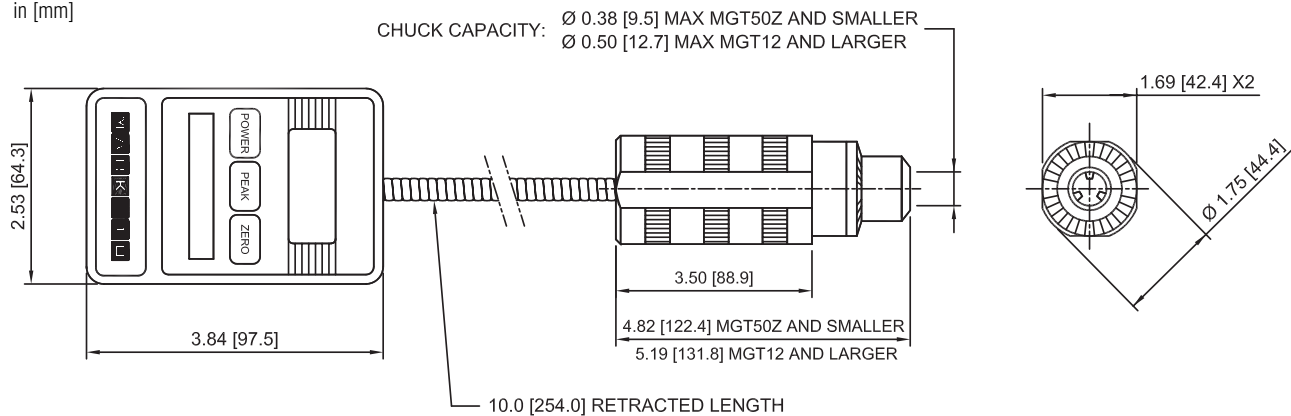
Accuracy:	±0.5% of full scale ±1 digit
Sampling rate:	30 readings/s
Display rate:	2.5 updates/s in normal operation / 30 updates/s in peak mode
Power:	AC or non-rechargeable battery, with Intelligent Power Management System (IPM). IPM warns the user via a "LO BAT" indicator and then will power off the gauge.
Battery life:	30 hours of continuous use
Selectable units of measurement:	lbFin/ozFin, kgFmm, Ncm (depending on model)
Safe overload:	150% of full scale (display shows "----" at 110% and above)
Weight:	1.8 lb [0.8 kg]
Environmental requirements:	40° F - 100°F [5°C - 45°C], <96% humidity (non-condensating)
Thermal effects:	Zero: 0.03% of full scale/°C, Span: 0.01% of full scale/°C
Housing construction:	Aluminum
Warranty	3 years (see individual statement for further details)

## Features

Compact design	Portable and flexible in a wide range of applications
Push-button	Simple and quick calibration procedure calibration
Peak memory	For tension and compression
Selectable units of measurement	Measure in lbFin/ozFin, kgFmm, or Ncm (depending on model)
Reversible housing	Housing can be reversed for handheld or test stand use

## Dimensions

in [mm]



## Ordering Information

Model No.	Capacity x Resolution
MGT10Z	10 x 0.01 ozFin, 7 x 0.005 kgFmm, 7 x 0.005 Ncm, 110V
MGT20Z	20 x 0.02 ozFin, 14 x 0.01 kgFmm, 14 x 0.01 Ncm, 110V
MGT50Z	50 x 0.05 ozFin, 36 x 0.05 kgFmm, 35 x 0.05 Ncm, 110V
MGT12	12 x 0.01 lbFin, 140 x 0.1 kgFmm, 135 x 0.1 Ncm, 110V
MGT50	50 x 0.05 lbFin, 580 x 0.5 kgFmm, 570 x 0.5 Ncm, 110V
MGT100	100 x 0.1 lbFin, 1150 x 1 kgFmm, 1150 x 1 Ncm, 110V

For 220V operation, add suffix E to model number. Example: MGT12E



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32-1059 REV 0



Series CT cap torque testers present a powerful, yet value priced solution for closure manufacturers, bottlers, food and beverage companies, and others. The tester features a solid aluminum housing and rugged construction for many years of service in laboratory or production environments. Adjustable posts effectively grip a broad range of container shapes and sizes, while a set of optional jaws is available as an alternative gripping method. The CT captures peak torque in both clockwise and counterclockwise directions for application and removal measurements.

## Features

Wide sample size range	Portable and flexible for a wide range of applications
Peak memory	For application and removal torque
Selectable units of measurement	Measure in lbFin, kgFmm, or Ncm
Moveable posts	Accommodate a wide range of samples
Push-button	Simple and quick calibration procedure calibration

## Optional Equipment

Sample gripping jaws CT001	Set of rubber jaws for gripping square or odd shape containers
Data outputs package CTRS	RS-232 and Mitutoyo (Digimatic) outputs
Output cables	Choice of RS-232 and Mitutoyo data output cables are available



» Moveable posts



» Simple hand operation



» Optional sample gripping jaws



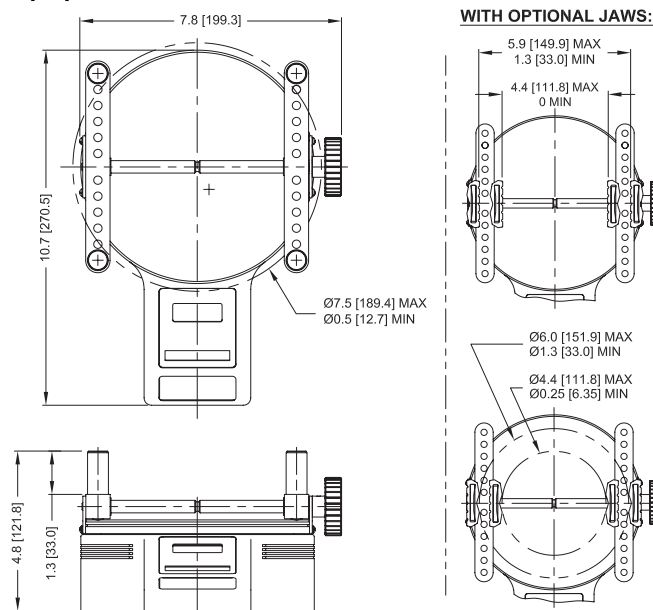
» Optional data outputs package

## Specifications

Accuracy:	±0.5% of full scale ±1 digit
Sampling Rate:	30 readings/s
Display Rate:	2.5 updates/s in normal mode / 30 updates/s in peak mode
Power:	AC or non-rechargeable 9V battery, with Intelligent Power Management System (IPM). IPM warns the user via a "LO BAT" indicator and then will power off the gauge.
Battery Life:	30 hours of continuous use
Selectable units of measurement:	lbFin, kgFmm, Ncm
Safe overload:	150% of full scale (display shows "----" at 110% and above)
Weight:	10 lb [4.5 kg]
Environmental Requirements:	40° F - 100° F [5°C - 45°C], <96% humidity (non-condensating)
Thermal effects:	Zero: 0.03% of full scale/°C, Span: 0.01% of full scale/°C
Housing construction:	6061 aluminum
Warranty	3 years (see individual statement for further details)

## Dimensions

in [mm]



## Ordering Information

Model No.	Capacity x Resolution
CT12	12 x 0.01 lbFin, 140 x 0.1 kgFmm, 135 x 0.1 Ncm, 110V
CT50	50 x 0.05 lbFin, 580 x 0.5 kgFmm, 570 x 0.5 Ncm, 110V
CT100	100 x 0.1 lbFin, 1150 x 1 kgFmm, 1150 x 1 Ncm, 110V
CT001	Sample gripping jaws, pair
CTRS	Outputs package for CT (RS-232 and Mitutoyo outputs)

For 220V operation, add suffix E to model number. Example: CT50E

32-1063 REV 0



Series ST Torque Tool Testers present a simple, yet accurate solution for testing torque screwdrivers, wrenches, and other tools. Applications exist in manufacturing facilities in virtually every industry. The ST features a solid aluminum housing, making it rugged enough for many years of service in production or laboratory use, while a universal receptacle with square drive and grooves accepts common bits and attachments. The ST captures peak torque in both clockwise and counterclockwise directions.

## Features

Universal receptacle	Accepts many types of torque tools and fixtures
Peak memory	For clockwise and counterclockwise torque
Selectable units of measurement	Measure in lbFin, kgFmm, or Ncm
Data outputs	RS-232 and Mitutoyo (Digimatic)
Push-button	Simple and quick calibration procedure calibration

## Specifications

Accuracy:	±0.5% of full scale ±1 digit
Sampling Rate:	65 readings/s
Display Rate:	2.5 updates/s in normal mode / 65 updates/s in peak mode
Power:	AC or non-rechargeable 9V battery, with Intelligent Power Management System (IPM). IPM warns the user via a "LO BAT" indicator and then will power off the gauge.
Battery Life:	30 hours of continuous use
Selectable units of measurement:	lbFin, kgFmm, Ncm
Outputs:	Optional
RS-232	Fully configurable up to 9600 baud
Mitutoyo (Digimatic)	Serial BCD suitable for all Mitutoyo SPC-compatible devices
Safe overload:	150% of full scale (display shows "----" at 110% and above)
Weight:	4.8 lb [2.2 kg]
Environmental Requirements:	40° F - 100° F [5° C - 45° C], <96% humidity (non-condensating)
Thermal effects:	Zero: 0.03% of full scale/°C, Span: 0.01% of full scale/°C
Housing construction:	Aluminum
Warranty	3 years (see individual statement for further details)

## Optional Equipment

Bench mounting bracket ST001	Allows the ST to be mounted securely on a bench.
Output cables	Choice of RS-232 and Mitutoyo data output cables are available



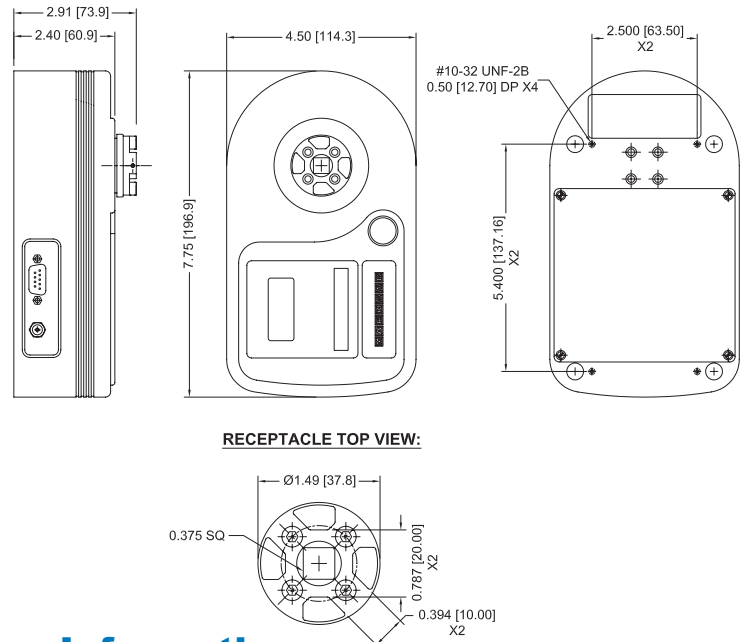
Simply place the torque tool into the universal receptacle and twist. The readout will show the torque value in the clockwise or counterclockwise direction.



Optional bench mounting bracket

## Dimensions

in [mm]



RECEPTACLE TOP VIEW:

## Ordering Information

Model No.	Capacity x Resolution
ST12	12 x 0.01 lbFin, 140 x 0.1 kgFmm, 135 x 0.1 Ncm, 110V
ST50	50 x 0.05 lbFin, 580 x 0.5 kgFmm, 570 x 0.5 Ncm, 110V
ST100	100 x 0.1 lbFin, 1150 x 1 kgFmm, 1150 x 1 Ncm, 110V
ST001	Bench mounting bracket for ST

For 220V operation, add suffix E to model number. Example: ST50E