COOPER INSTRUMENTS & SYSTEMS

U FORCE GAGES

USER'S GUIDE

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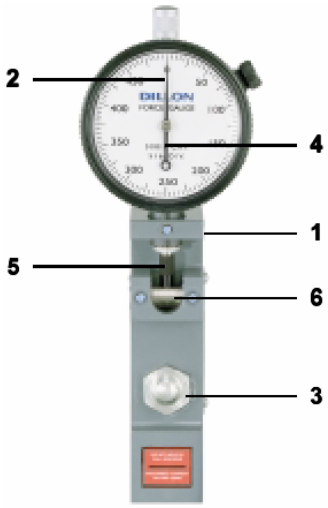
The Model U Force Gauge is an accurate (±1% of full range) mechanical compression-measurement instrument. Its slim-line design has repeatedly proven valuable in installations where space is at a premium.

The versatility of this simple instrument is demonstrated by the fact that it can be used as a handheld device, permanently mounted on a flat surface plate, or used in test fixtures.

How the U Force Gauge Works

The U Force Gauge employs a deflection beam machined from aircraft quality alloy steel and heat treated to develop optimum strength and spring characteristics. A precision dial indicator is mounted at the null point of this beam.



1. Deflection beam
2. Indicator with zero at 6:00 position
3. Pressure fitting
4. Maximum pointer (optional)
5. Indicator plunger
6. Slanted anvil

Compression force is normally applied against a single pressure fitting mounted on the upper half of the beam. (For accurate calibration, designate the type of pressure fitting you wish to use with the U Force Gauge. They are of four types: domed, cupped, flat, or a flat nylon insert. Flat bottom gauges require only one fitting. Recessed bottom gauges have top and bottom fittings).

When load is exerted, the beam moves downward causing a slanted anvil on the free end to push against the indicator plunger. The indicator reading is a direct representation of the applied load.

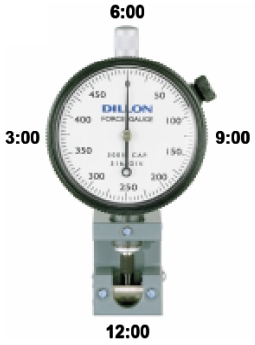
Cooper offers a capacity for every job
U Force Gauges are available for measurement in pounds, kilograms or newtons. There are 9-pound capacities ranging from 25 x .25 to 10,000 x 100 lb. The 7 kilogram capacities range from 10 x .1 to 5,000 x 50 kg.

On light capacity models with capacities from 25 to 250 lb or 10 to 100 kg, you can choose between flat bottom and recessed design.

*The Model "**U**" with **recessed** deflection beam is designed for applications where space is limited. It includes compression-loading fittings for top and bottom.*

Cooper also offers high-capacity gauges with lb capacities from 500 to 10,000 lb and metric capacities from 500 to 5000 kg. High-capacity gauges all have flat-bottom design, and each includes one pressure fitting of your choice.

Options



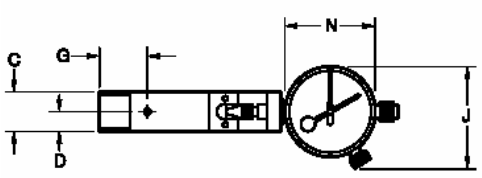
Zero position —The zero position on the indicator dial can be factory positioned at 12 o'clock, 3 o'clock, 6 o'clock, or 9 o'clock. The standard position is the 6 o'clock position.

Maximum pointer —Model U Force Gauges can include a maximum pointer which remains at peak load until it is reset.

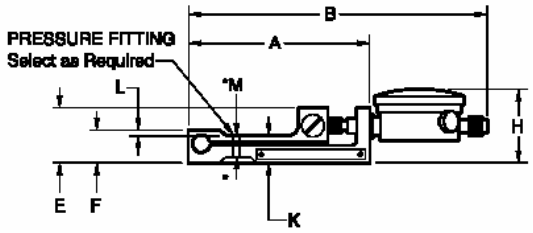
Shockless dial indicator —Offers added protection in applications where force is applied or released rapidly.

Dial orientation —The dial indicator can be factory positioned at 0° (standard), 90°, 180°, 270° clockwise. Photos on this page show standard dial orientation.

Note: maximum pointer and shockless dial indicator cannot be offered on the same unit.



**Recessed bottom optional on all low-range models only*



Low-Range Recessed-Bottom Model U Force Gauge

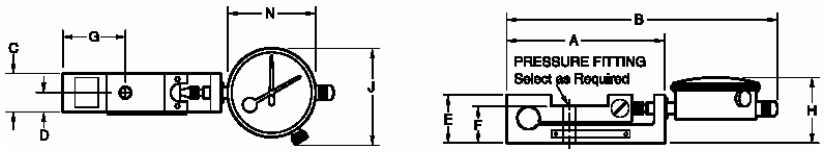
Part No.	lb (kg)	A in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)	F in. (mm)	G in. (mm)	H in. (mm)	J in. (mm)	K in. (mm)	L in. (mm)	M in. (mm)	N in. (mm)
30489-0015	25 x .25	3.28	5.50	.73	.36	.97	.56	.90	1.40	1.87	.46	.094	.349	1.67
(30489-0064)	(10 x .1)	(83.3)	(139.6)	(18.5)	(9.1)	(24.6)	(14.2)	(22.8)	(35.5)	(47.5)	(11.7)	(2.4)	(8.9)	(42.4)
30489-0023	50 x .5	3.28	5.50	.73	.36	.97	.56	.90	1.40	1.87	.46	.094	.349	1.67
(30489-0072)	(25 x .25)	(83.3)	(139.6)	(18.5)	(9.1)	(24.6)	(14.2)	(22.8)	(35.5)	(47.5)	(11.7)	(2.4)	(8.9)	(42.4)
30489-0031	100 x 1	3.28	5.50	.73	.36	.97	.56	.90	1.40	1.87	.46	.094	.349	1.67
(30489-0080)	(50 x .5)	(83.3)	(139.6)	(18.5)	(9.1)	(24.6)	(14.2)	(22.8)	(35.5)	(47.5)	(11.7)	(2.4)	(8.9)	(42.4)
30489-0056	250 x 2.5	3.28	5.50	.73	.36	.97	.56	.90	1.40	1.87	.46	.094	.349	1.67
(30489-0098)	(100 x 1)	(83.3)	(139.6)	(18.5)	(9.1)	(24.6)	(14.2)	(22.8)	(35.5)	(47.5)	(11.7)	(2.4)	(8.9)	(42.4)

Also available in newton calibration

Low-Range Flat-Bottom Model U Force Gauge

Part No.	Pounds	Part No.	Kilograms	A in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)	F in. (mm)	G in. (mm)	H in. (mm)	J in. (mm)	K in. (mm)	L in. (mm)	M in. (mm)	N in. (mm)
30354-0017	25 x .25	30354-0066	10 x .1	3.28	5.50	.73	.36	.97	.56	.90	1.40	1.87	.46	.094	.349	1.67
				(83.3)	(139.6)	(18.5)	(9.1)	(24.6)	(14.2)	(22.8)	(35.5)	(47.5)	(11.7)	(2.4)	(8.9)	(42.4)
30354-0025	50 x .5	30354-0074	25 x .25	3.28	5.50	.73	.36	.97	.56	.90	1.40	1.87	.46	.094	.349	1.67
				(83.3)	(139.6)	(18.5)	(9.1)	(24.6)	(14.2)	(22.8)	(35.5)	(47.5)	(11.7)	(2.4)	(8.9)	(42.4)
30354-0033	100 x 1	30354-0082	50 x .5	3.28	5.50	.73	.36	.97	.56	.90	1.40	1.87	.46	.094	.349	1.67
				(83.3)	(139.6)	(18.5)	(9.1)	(24.6)	(14.2)	(22.8)	(35.5)	(47.5)	(11.7)	(2.4)	(8.9)	(42.4)
30354-0058	250 x 2.5	30354-0090	100 x 1	3.28	5.50	.73	.36	.97	.56	.90	1.40	1.87	.46	.094	.349	1.67
				(83.3)	(139.6)	(18.5)	(9.1)	(24.6)	(14.2)	(22.8)	(35.5)	(47.5)	(11.7)	(2.4)	(8.9)	(42.4)

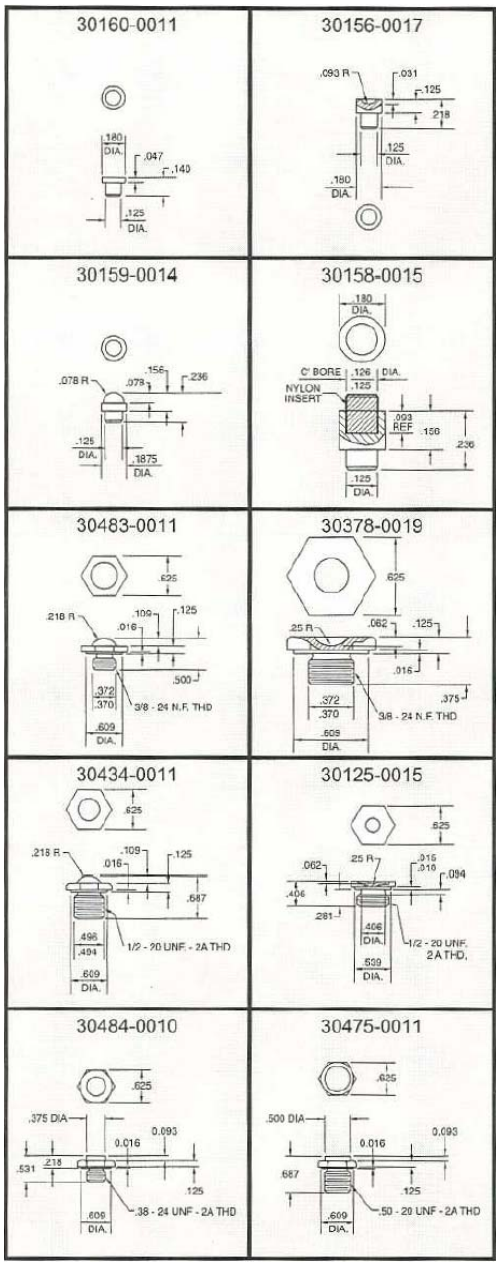
Also available in newton calibration



High-Range Model U Force Gauge

Part No.	Pounds	Part No.	Kilograms	A in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)	F in. (mm)	G in. (mm)	H in. (mm)	J in. (mm)	N in. (mm)
30482-0020	500 x 5	- - - -	- - - -	3.87 (98.0)	6.75 (171.3)	.98 (24.9)	.49 (12.4)	1.25 (31.5)	.92 (23.6)	1.52 (38.6)	1.67 (42.4)	2.44 (63.5)	2.25 (57.2)
30482-0053	1,000 x 10	30482-0079	500 x 5	3.87 (98.0)	6.75 (171.3)	.98 (24.9)	.49 (12.4)	1.25 (31.5)	.92 (23.6)	1.52 (38.6)	1.67 (42.4)	2.44 (63.5)	2.25 (57.2)
30478-0018	2,000 x 20	30478-0042	1,000 x 10	4.74 (120.1)	7.94 (201.5)	.98 (24.9)	.49 (12.4)	1.72 (43.7)	1.41 (35.5)	2.06 (52.3)	2.06 (52.3)	2.88 (72.8)	2.75 (69.9)
30478-0034	5,000 x 50	- - - -	- - - -	4.74 (120.1)	7.94 (201.5)	.98 (24.9)	.49 (12.4)	1.72 (43.7)	1.41 (35.5)	2.06 (52.3)	2.06 (52.3)	2.88 (72.8)	2.75 (69.9)
30432-0039	10,000 x 100	30432-0054	5,000 x 50	4.35 (110.2)	9.19 (233.2)	1.44 (36.5)	.72 (18.3)	2.12 (53.8)	1.82 (46.0)	2.31 (58.6)	2.32 (58.9)	3.72 (94.4)	3.62 (91.9)

Also available in newton calibration



Select the right pressure fittings

Load is applied to the Model U Force Gauge through hardened pressure fittings. Each recessed-bottom gauge includes two fittings which you may choose from the following list. Each flat-bottom gauge includes one fitting which you may choose from the following list.

For 25 to 250 lb (10 to 100 kg) capacity gauges:
Part No. 30160-0011 flat surface
Part No. 30156-0017 cupped surface
Part No. 30159-0014 domed surface
Part No. 30158-0015 nylon insert

For 500 lb, 1000 lb, and 500 kg capacity gauges:
Part No. 30483-0011 domed surface
Part No. 30378-0019 cupped surface
Part No. 30484-0010 flat surface

For 2,000 to 10,000 lb (1,000 to 5,000 kg) capacity gauges:
Part No. 30434-0011 domed surface pressure fitting
Part No. 30125-0015 cupped surface pressure fitting
Part No. 30475-0011 flat surface

WARRANTY REPAIR POLICY

Limited Warranty on Products

Any Cooper Instruments product which, under normal operating conditions, proves defective in material or in workmanship within one year of the date of shipment by Cooper will be repaired or replaced free of charge provided that a return material authorization is obtained from Cooper and the defective product is sent, transportation charges prepaid, with notice of the defect, and it is established that the product has been properly installed, maintained, and operated within the limits of rated and normal usage. Replacement or repaired product will be shipped F.O.B. from our plant. The terms of this warranty do not extend to any product or part thereof which, under normal usage, has an inherently shorter useful life than one year. The replacement warranty detailed here is the buyer's exclusive remedy, and will satisfy all obligations of Cooper whether based on contract, negligence, or otherwise. Cooper is not responsible for any incidental or consequential loss or damage which might result from a failure of any and all other warranties, express or implied, including implied warranty of merchantability or fitness for particular purpose. Any unauthorized disassembly or attempt to repair voids this warranty.

Obtaining Service under Warranty

Advance authorization is *required* prior to the return to Cooper Instruments. Before returning the item, contact the Repair Department c/o Cooper Instruments at (540) 349-4746 for a Return Material Authorization number. Shipment to Cooper shall be at buyer's expense and repaired or replacement items will be shipped F.O.B. from our plant in Warrenton, Virginia. Non-verified problems or defects may be subject to a $100 evaluation charge. Please return the original calibration data with the unit.

Repair Warranty

All repairs of Cooper products are warranted for a period of 90 days from date of shipment. This warranty applies only to those items that were found defective and repaired; it does not apply to products in which no defect was found and returned as is or merely recalibrated. It may be possible for out-of-warranty products to be returned to the exact original specifications or dimensions.

* Technical description of the defect: In order to properly repair a product, it is *absolutely necessary* for Cooper to receive information specifying the reason the product is being returned. Specific test data, written observations on the failure and the specific corrective action you require are needed.