

Dillon Model X Mechanical Force Gauges

Measure tension, compression and push/pull.



Model X-C with compression calibration

Model X-C comes in nine capacities ranging from 50 lb to 25,000 lb or 50 to 10000 kg. All feature accuracy of $\pm 1\%$ of full capacity, except the 25,000 (10000 kg) capacity instruments which are accurate to $\pm 2\%$ of full capacity.

Load is applied against a hardened ball which rotates to maintain vertical alignment as pressure increases. The ball is held in place with a spring clip or retainer. A threaded mounting hole is located opposite the loading ball in the bottom of the beam.

Model X-C is available in pound, kilogram or Newton capacities.



Model X-ST with tension calibration

Dillon offers the Model X-ST in seven capacities from 100 lb to 10,000 lb or 25 kg to 5000 kg. Accuracy is $\pm 1\%$ of full range. (Note: For applications requiring capacities beyond 10,000 lb or 5000 kg in tension, consider the Dillon Dynamometer).

Tension Force Gauges in capacities through 2,000 lb (1000 kg) are supplied with two rod-end connectors. 5,000 and 10,000 lb (5000 kg) capacities are equipped with convenient shackles and pins.

Calibration is available in pounds, kilograms or Newtons.



Model X-PP with compression/tension calibration

Force gauges calibrated in push-pull are available in four capacities in pounds ranging from 50-0-50 lb up to and including 2,500-0-2,500 lb and three metric capacities from 50-0-50 to 1000-0-1000 kg. Accuracy is $\pm 2\%$ of maximum dial reading (based upon total capacity of both compression and tension scales).

Model X-PP gauges in capacities up to and including 500-0-500 lb or 250-0-250 kg are supplied with a set of self-aligning spherical rod-end connectors for tension loading. Force is applied to connectors through a hardened steel pin which must be slip fit in connector holes.

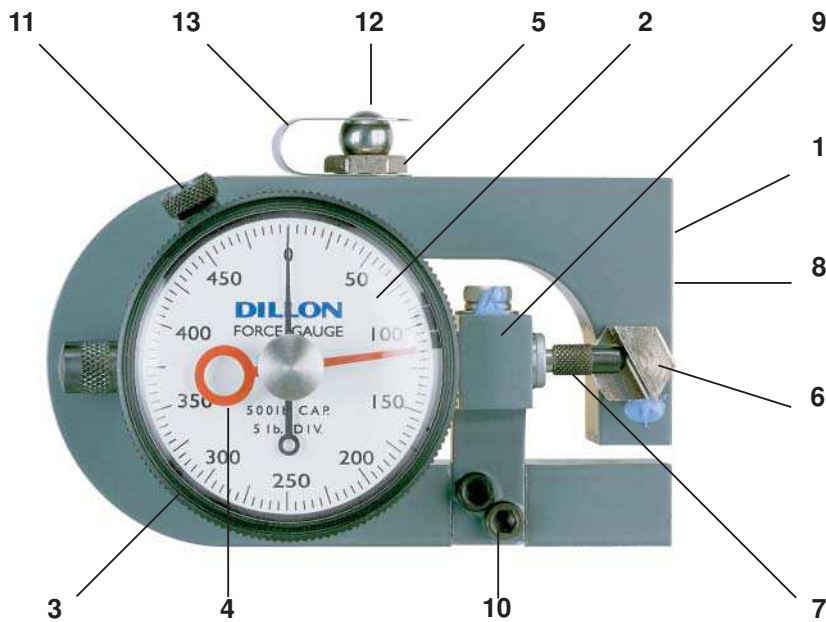
2,500-0-2,500 lb and 1000-0-1000 kg capacity gauges are equipped with two shackle adapters, shackles and pins. Shackles must be removed when compression load is involved. Force is then applied against shackle pins in a suitable test setup.

All push-pull gauges are supplied with a compression-loading spherical ball fitting for compression loading.

Options

- Shockless dial indicator for installations involving the sudden application or release of force. (Maximum pointer cannot be supplied with shockless dial indicator.)
- Maximum load pointer which remains at peak load until manually reset. (not available on Model X-PP)
- Zero position on dial may be factory positioned at 12, 3, 6, or 9 o'clock. Standard position is at 12 o'clock.

Model X Force-Gauge parts identification



1. Deflection beam
2. Dial indicator with zero at standard 12:00 position.
3. Bezel
4. Maximum load pointer (optional)
5. Pressure button
6. Slanted Anvil
7. Dial indicator plunger
8. Anvil set screw
9. Mounting bracket for dial indicator
10. Screws for mounting bracket
11. Bezel-locking screw
12. Loading ball
13. Spring retainer clip

Principle of operation

A D-shaped deflection beam is the heart of the Dillon Force Gauge. Machined to close tolerances, beams are heat treated to develop optimum strength and spring characteristics. High-strength aluminum is used in Model X instruments through 500 lb (200 kg). Ranges above this are fabricated from aircraft-quality alloy steel.

A precision dial indicator is mounted at the null point of the deflection beam. The indicator plunger rests against a slanted anvil at the open end of the beam, as shown in the photo. Under compression loads, the two halves of the beam tend to close. Tension force causes them to move apart. This action pushes the plunger inward, as determined by the slant of the anvil. Readings produced on the dial are in direct relation to applied load. The pointer revolves 360° clockwise under compression or tension forces. Push-pull gauges read half scale (180°) clockwise in compression, and counterclockwise, 180° from center zero under tension loads.

Low beam deflection

When measured across the center of top- and bottom-loading holes, the approximate beam deflection is as follows:

50 to 250-lb capacity (25 to 100 kg)	0.019"
500-lb capacity (200 kg)	0.016"
1,000-lb capacity (500 kg)	0.018"
2,000-lb capacity (1000 kg)	0.011"
5- and 10,000-lb capacity (2 and 5000 kg)	0.010"
25,000-lb capacity (10,000 kg)	0.022"

Overload rating

Accidental overloads up to 30% of capacity can be safely sustained without injury to the dial indicator or deflection beam. All capacities feature a 5:1 design safety factor.

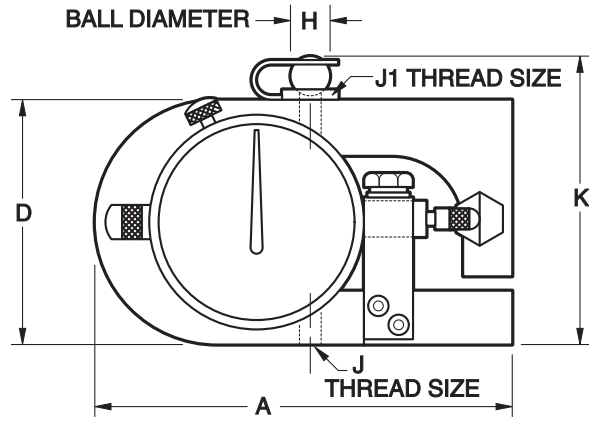
General information

- To reset zero, loosen knurled bezel-locking screw and rotate dial.
- Dillon Model X Force Gauges may be mounted horizontally, vertically, or flat.
- The baked-enamel finish resists corrosion and rust.
- Operating temperature up to 120° F.

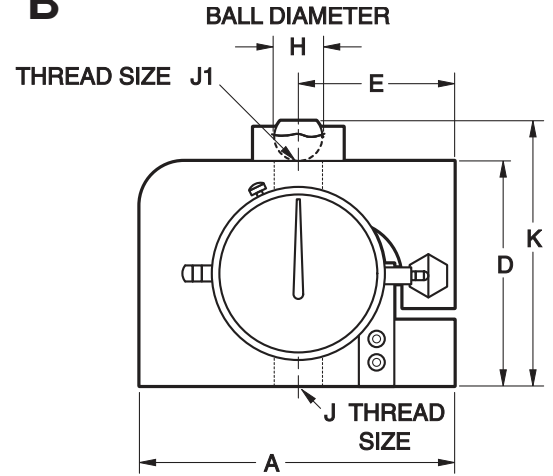
Certificate of Calibration

An official Certificate of Calibration traceable to NIST, dated and signed, accompanies each new or factory serviced Dillon X Force Gauge.

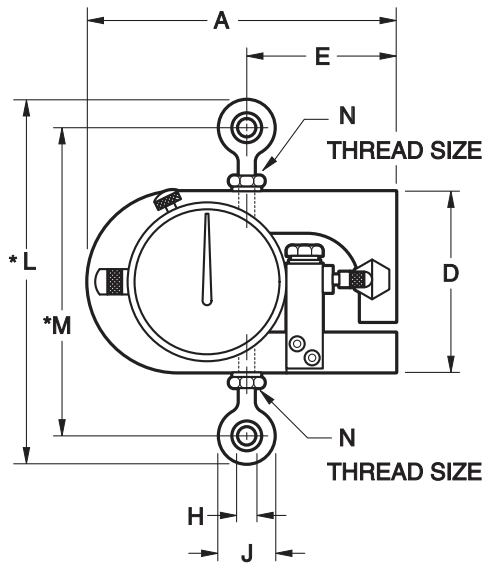
A



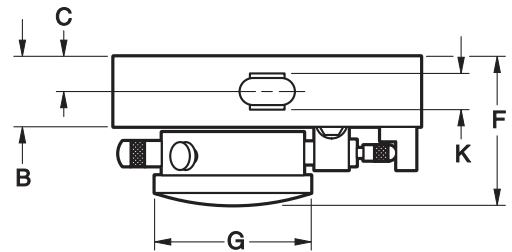
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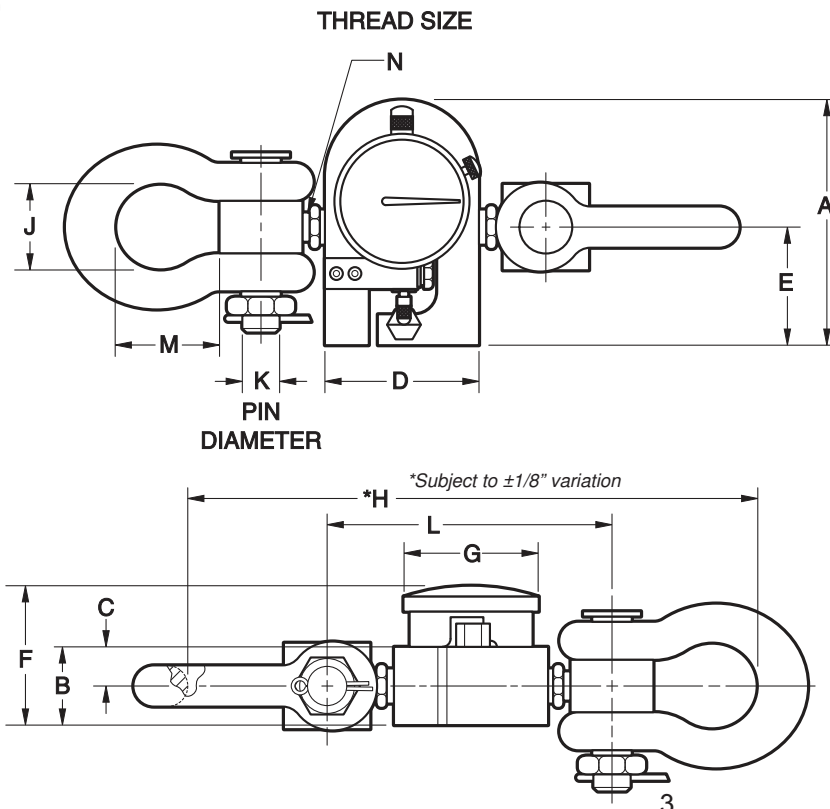
C



Top View of Drawings A,B,C



D



C

Part No.	Tension lb	Part No.	Tension kg
----	----	30443-0176*	25 x .25
30443-0044	100 x 1	30443-0093	50 x .5
30443-0150*		30443-0184*	
30445-0034	250 x 2.5	----	100 x 1
30445-0109*		30445-0182*	
30445-0018	500 x 5	30445-0026	200 x 2
30445-0083*		30445-0091*	
30276-0012	1,000 x 10	----	500 x 5
30276-0053*		30276-0061*	
30440-0013	2,000 x 20	----	1000 x 10
30440-0054*		30440-0062*	

D

----	5,000 x 50	----	2000 x 20
30442-0052*			
----	10,000 x 100	----	5000 x 50
30441-0053*		30441-0061*	

* with max hand

Model X-C (Compression) 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)	J1 in. (mm)	K in. (mm)
A	30386-0035	50 x .5	----	----	4.25 (107.9)	1.00 (25.4)	.50 (12.7)	2.50 (63.5)	2.06 (52.3)	2.00 (50.8)	2.25 (57.1)	.38 (9.6)	1/4-28	1/4-28	2.94 (74.6)
	30386-0043 30386-0159*	100 x 1	----	50 x .5	4.25 (107.9)	1.00 (25.4)	.50 (12.7)	2.50 (63.5)	2.06 (52.3)	2.00 (50.8)	2.25 (57.1)	.38 (9.6)	1/4-28	1/4-28	2.94 (74.6)
	30446-0033 30446-0090*	250 x 2.5	----	100 x 1	4.25 (107.9)	1.00 (25.4)	.50 (12.7)	2.50 (63.5)	2.06 (52.3)	2.00 (50.8)	2.25 (57.1)	.38 (9.6)	1/4-28	1/4-28	2.94 (74.6)
	30446-0017 30446-0074*	500 x 5	----	200 x 2	4.25 (107.9)	1.00 (25.4)	.50 (12.7)	2.50 (63.5)	2.06 (52.3)	2.00 (50.8)	2.25 (57.1)	.38 (9.6)	1/4-28	1/4-28	2.94 (74.6)
	30444-0019 30444-0050*	1,000 x 10	----	500 x 5	4.25 (107.9)	1.00 (25.4)	.50 (12.7)	2.50 (63.5)	2.06 (52.3)	2.00 (50.8)	2.25 (57.1)	.38 (9.6)	1/2-20	1/2-20	2.94 (74.6)
	30388-0017 30388-0058*	2,000 x 20	----	1000 x 10	4.75 (120.6)	1.00 (25.4)	.50 (12.7)	3.00 (76.1)	2.25 (57.1)	2.50 (63.5)	2.75 (69.8)	.38 (9.6)	1/2-20	1/2-20	3.44 (87.3)
	30389-0016 30389-0057*	5,000 x 50	----	2000 x 20	4.75 (120.6)	1.00 (25.4)	.50 (12.7)	3.00 (76.1)	2.25 (57.1)	2.50 (63.5)	2.75 (69.8)	.38 (9.6)	1/2-20	1/2-20	3.44 (87.3)
B	30423-0014 30423-0055*	10,000 x 100	----	5000 x 50	5.87 (149.0)	1.87 (47.5)	.94 (23.9)	3.94 (100.0)	2.75 (69.8)	3.00 (76.1)	3.62 (91.9)	.75 (19.0)	7/8-14	7/8-14	4.50 (114.2)
	30449-0014 30449-0055*	25,000 x 250	----	10000 x 100	6.56 (166.5)	2.38 (60.4)	1.18 (29.9)	4.68 (118.8)	3.31 (84.0)	3.63 (92.1)	3.62 (91.9)	1.00 (25.4)	1-14	1 1/4-12	5.50 (139.6)

* with max hand

Model X-ST (Tension) and Model X-PP (Push-Pull) Gauges

	Part No.	Push-Pull lb	Part No.	Push-Pull 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)
	----	----	----	----	4.25 (107.9)	1.00 (25.4)	.50 (12.7)	2.50 (63.5)	2.06 (52.3)	2.03 (51.5)	2.25 (57.1)	.25 (6.3)	.75 (19.0)	.38 (9.6)	5.00	4.25 (107.9)	1/4-28
	30795-0014	50-0-50	----	----	4.25 (107.9)	1.00 (25.4)	.50 (12.7)	2.50 (63.5)	2.06 (52.3)	2.03 (51.5)	2.25 (57.1)	.25 (6.3)	.75 (19.0)	.38 (9.6)	5.00	4.25 (107.9)	1/4-28
	30796-0013	125-0-125	30796-0021	50-0-50	4.25 (107.9)	1.00 (25.4)	.50 (12.7)	2.50 (63.5)	2.06 (52.3)	2.03 (51.5)	2.25 (57.1)	.25 (6.3)	.75 (19.0)	.38 (9.6)	5.00	4.25 (107.9)	1/4-28
	----	----	----	----	4.25 (107.9)	1.00 (25.4)	.50 (12.7)	2.50 (63.5)	2.06 (52.3)	2.03 (51.5)	2.25 (57.1)	.25 (6.3)	.75 (19.0)	.38 (9.6)	5.00	4.25 (107.9)	1/4-28
	30798-0011	500-0-500	----	----	4.25 (107.9)	1.00 (25.4)	.50 (12.7)	2.50 (63.5)	2.06 (52.3)	2.03 (51.5)	2.25 (57.1)	.50 (12.7)	1.31 (33.2)	.62 (15.7)	6.94	5.62 (155.3)	1/2-20
	----	----	----	----	4.75 (120.6)	1.00 (25.4)	.50 (12.7)	3.00 (76.1)	2.25 (57.1)	2.19 (55.6)	2.75 (69.8)	.50 (12.7)	1.31 (33.2)	.62 (15.7)	7.44	6.12 (155.3)	1/2-20
	30800-0017	2,500-0-2,500	30800-0025	1000-0-1000	4.75 (120.6)	1.50 (38.1)	.75 (19.0)	3.00 (76.1)	2.25 (57.1)	2.66 (67.5)	2.75 (69.8)	10.94 (277.7)	1.69 (42.9)	.75 (19.0)	5.44	1.94 (138.1)	1/2-20
	----	----	----	----	5.88 (149.2)	1.88 (47.7)	.94 (23.9)	3.94 (100.0)	2.75 (69.8)	3.00 (76.1)	3.62 (91.9)	12.69 (322.1)	1.69 (42.9)	.75 (19.0)	7.19	1.94 (182.5)	7/8-1/4

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