

FGE Series Digital Force Gauges Models FGE-0.5 — FGE-100

Instruction Manual



General Information

You have just received the world's most rugged and economical force gauge. For the price of a mechanical gauge you have all the advantages of a small digital instrument ergonomically designed to fit perfectly in the palm of your hand. With the touch of a button you can measure force in any engineering units desired (lbs, kgs and N).

The unit's microprocessor enables it to measure forces very accurately in the "average" or "peak" mode. Its LCD display is smartly designed to inform the operator at all times of exactly what's going on.

If the hanger is used or the gauge is placed on a test stand, reversing the display so that it can be read right-side-up is simple: press only two buttons and the digits and units indicators reverse themselves instantly.

Precautions

Do not use the gauge in hostile environments:

- A. High humidity areas
- B. High temperature environments
(see specifications table)
- C. Caustic areas where various chemicals can seep into the unit.

When not in use, place gauge back in its case to prevent any damage due to accidental drop etc. With a little care you can have an instrument that can last and provide service for many years.

Operation

When the carrying case is opened make sure you have all the accessories that came with the instrument; namely adapter/charger, hook, flat head, and hanger.

1. Charge the batteries for approx. 12 hrs. before using the gauge. (batteries come discharged from the factory) When batteries are charging the BAT indicator is ON. When the batteries are fully charged the indicator goes OFF.
2. Hand tighten appropriate attachment to unit's measuring shaft (do not use a wrench or any other device to tighten the attachment).
3. Press the POWER switch and release. On the release of the switch the display will momentarily show all 8's (digit segment self-check) and then will show some zeros with the last one or two digits changing to some random numbers. Also the unit of measurement (lbs, kgs or N) will appear above the digits and stay as long as the instrument is on.

Change Display Units

To change the display units, just press the UNIT button and the units will change every time this particular button is pressed.

Reverse the Display

If unit is used with the hanger or mounted on a test stand and the display must be reversed, follow this procedure:

1. Press the POWER switch and hold it; display will go blank.
2. Press and hold UNIT switch.
3. Release POWER switch while you are still holding the UNIT switch; display is still blank.
4. Press the POWER switch once more and release it while still holding the UNIT switch. At this point you should see the display reversed.
5. Release the UNIT switch; the display stays in that mode.

If you want to go back to the normal mode, just repeat steps 1 through 5.

Select Average or Peak

If you want to measure force in real time (average) the display will show only the digits and units of the force being measured. If you want to measure "peak" force:

1. Press the PEAK button; the word PEAK will appear in the upper left corner of the display.
2. The display will freeze after capturing the peak force.
3. Press ZERO to cancel previous peak and continue with your tests.

If you want to go back to average mode press the PEAK button again and the word PEAK will disappear from the display.

NOTE: It is very important that you measure forces (tension or compression) that are in line with the measuring shaft and not at any angle (see fig. 1). Failure to observe this directive will damage the instrument. Also, after the gauge is positioned and ready to take a measurement (with the proper attachment in place) tare the unit by pressing the ZERO switch. In the PEAK mode to clear the display for another measurement, press the ZERO switch.

Measure Tension

To measure tensile force use the hook attachment. The display will show the force measured and a minus sign (-) will appear on the left of the display (right next to the digits).

Measure Compression

To measure compression force use the flat head attachment. No sign will appear on the left of the display during a compression measurement.

Low Battery

When the battery charge starts to get low, a LO BAT sign appears in the upper left corner of the display. At this point, if necessary, the adapter/charger can be used to power the unit indefinitely. With the power off it takes approx. 12 hrs. to fully charge. When the battery is fully charged the adapter/charger cuts off completely to protect the battery.

Auto Power Off

If the power on the gauge is turned on and there is no activity for 10 minutes, the power is automatically cut-off to conserve battery charge. One minute before cut-off, the sign PWR appears above the display digits to remind the operator that there is 1 minute left before power cut-off. If the adapter/charger is powering the gauge, the Auto Power Cut-Off function becomes inactive.

Tracking Function

A tracking function has been introduced to check and compensate for temperature drift. When measuring very minute forces (a few oz.) and at a very slow rate, you may want to turn off the tracking function. To turn the tracking function on or off, follow the steps below:

1. Turn POWER off.
2. Press PEAK and UNIT switches simultaneously and hold these until step 3 is complete.
3. Press POWER switch and release it to turn the power on. If tracking function was on, the display will show TRK OFF momentarily.
4. Release buttons PEAK & UNIT. The tracking function is now off. Repeat above steps to turn it on. It is a good idea to have this function on all the time unless it is absolutely necessary to cancel it.

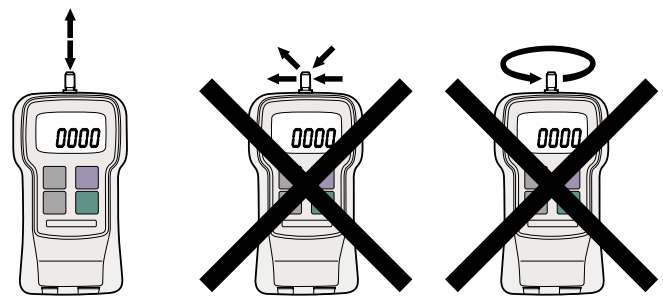
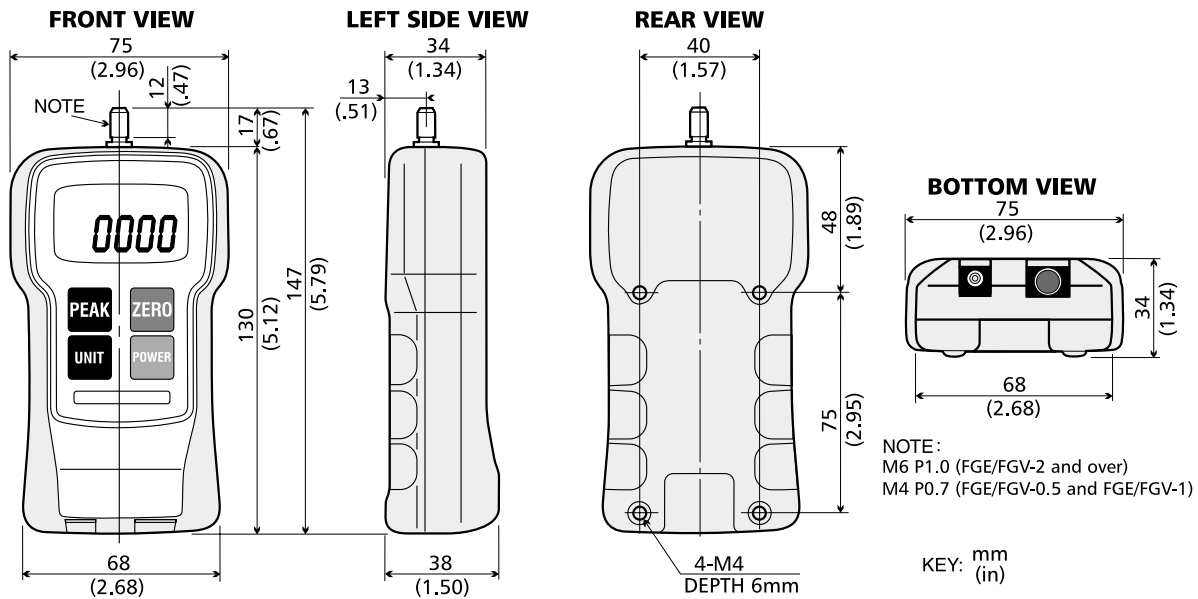


Fig. 1

Specifications

MODELS	FGE-0.5	FGE-1	FGE-2	FGE-5	FGE-10	FGE-20	FGE-50	FGE-100
CAPACITY	8 oz 200 g 2 N	16 oz 500 g 5 N	2 lb 1000 g 10 N	5 lb 2 Kg 20 N	10 lb 5 Kg 50 N	20 lb 10 Kg 100 N	50 lb 20 Kg 200 N	100 lb 50 Kg 500 N
RESOLUTION	0.01 lb 0.001 Kg 0.01 N	0.01 lb 0.001 Kg 0.01 N	0.001 lb 1 g 0.01 N	0.001 lb 0.001 Kg 0.01 N	0.01 lb 0.001 Kg 0.01 N	0.01 lb 0.01 Kg 0.1 N	0.01 lb 0.01 Kg 0.1 N	0.1 lb 0.01 Kg 0.1 N
ACCURACY	±0.2% FS plus 1/2 digit at 73°F (23°C)							
DISPLAY	4-Digit LCD, 12mm high. Reversible by a push of a button. Minus sign for tension.							
AVERAGE/PEAK MODE	Yes (selectable)							
LOW BATTERY INDICATION	Yes							
DISPLAY UPDATE	0.3 second							
SAMPLING RATE	35 times per second							
OVERLOAD	200% of FS							
POWER	Rechargeable Ni-Cad batteries or AC through adapter/charger							
OUTPUT	No							
AUTO POWER OFF	Yes (Not active if adapter/charger is in use)							
BATTERY CHARGE	20 hrs. when fully charged							
RECHARGE TIME	12 hrs. approx.							
TEMPERATURE	32 - 104°F (0 - 40°C)							
DIMENSIONS	5.1"L x 2.9"W x 1.5" H (130 x 75 x 38)mm							
WEIGHT	1 lb (450g)							
ACCESSORIES (INCLUDED)	AC adapter/charger, carrying case, hook, chisel, flat head, notched head, hanger, cone head and extension rod							
ACCESSORIES AVAILABLE	Test stands							

Dimensions



Calibration

Frequent calibration is necessary to insure the accuracy of your force gauge.

Required for Calibration:

1. A secure calibration stand to mount a force gauge upside-down.
2. The appropriate calibration weight for your force gauge:

MODEL	WEIGHT	MODEL	WEIGHT
FGE-0.5	200g	FGE-10	5Kg
FGE-1	500g	FGE-20	10Kg
FGE-2	1Kg	FGE-50	20Kg
FGE-5	2Kg	FGE-100	50Kg

Calibration Procedure:

1. Turn POWER off.
2. Mount the force gauge upside-down on the calibration stand.
3. Attach the hook on the sensing shaft of the force gauge.
4. Press and hold the UNIT, PEAK and ZERO switches.
5. Press and release the POWER switch (while continuing to press UNIT, PEAK and ZERO) until the smaller characters at the top area of the display show CAL. Release the UNIT, PEAK and ZERO switches. The force gauge is now in calibration mode.
6. Press the UNIT switch. The display will show ZER. The force gauge is now ready for zero point calibration.
7. Press ZERO to zero point calibrate. Wait 5 seconds. The display will change to show PEK. Do not press any other switches or move the sensing shaft during calibration.
8. Hang the calibration weight on the hook and stabilize; the larger characters on the display will change. The force gauge is now ready for full scale calibration.
9. Press the PEAK switch to begin full scale calibration. Do not press any other keys or touch the weight during calibration. After approximately 5 seconds the display will show END.
10. Press the UNIT switch. If calibration was successful, the display will show OK momentarily, then automatically power off. If calibration was unsuccessful, the display will show ERR. Remove the calibration weight and repeat the procedure from step 6.

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