Reliable Connections

fCAL 1
Calibration Measurement Unit

Product description

General function
The Oetiker fCAL 1 is a high-precision force measurement system to verify performance of all Oetiker clamp power tools. The handheld device pairs with interchangeable sensors and jaws, adapting easily to different tool geometries and configurations.

Compatibilities
All Oetiker clamp power tools

Intended use
Designed for quality control, maintenance, production, and service departments to measure the closing force of Oetiker power tools.

Certifications*
CE marked
EMC compliant
(*See supplement page for additional information)

Packaging
Comes in a protective case with foam insert that fits one measurement device, up to three sensors, and accessories.

Dimensions fCAL 1 Transport Case:
Length: 440 mm | Width: 360 mm | Height: 120 mm
Weight: 2263 g

Batteries
NiMH rechargeable batteries (4x AA 1.2 V 2500 mAh)

General data

Article numbers*

32100060	fCAL 1 Measuring Device
32100028	6 kN Closing Force Sensor
32100078	10 kN Closing Force Sensor
32100095	fCAL 1 Carrying Case
32100089	fCAL 1 Accessory Bundle

* See supplement page for additional information

Product attributes

Overview functional parts

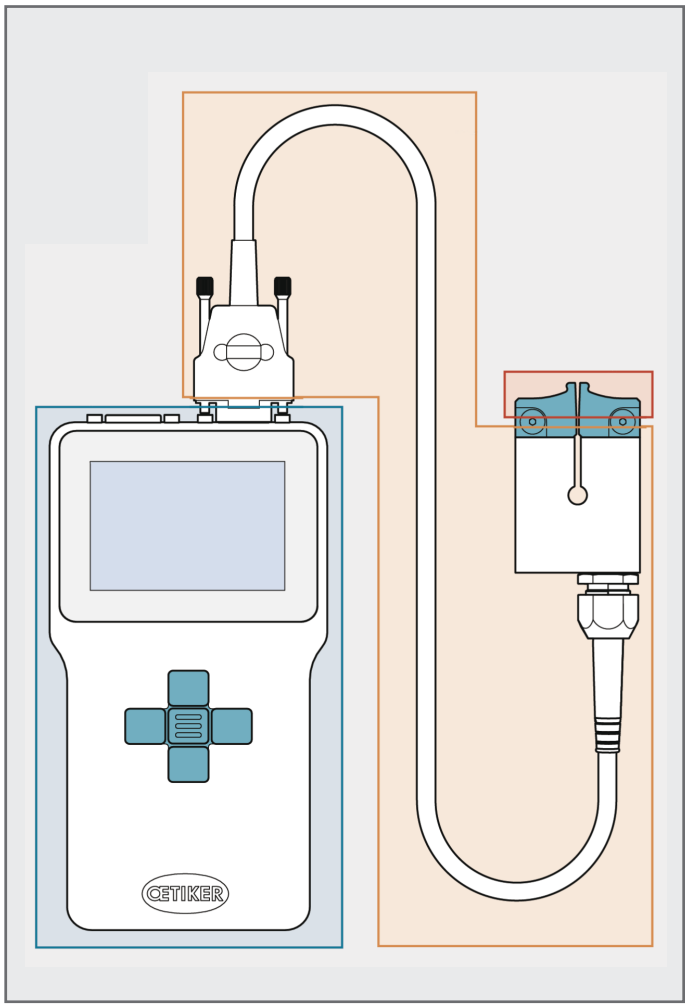
fCAL 1 Calibration Measurement Unit

fCAL 1 Calibration Measuring Unit

fCAL 1 Measuring Device

fCAL 1 Closing Force Sensor

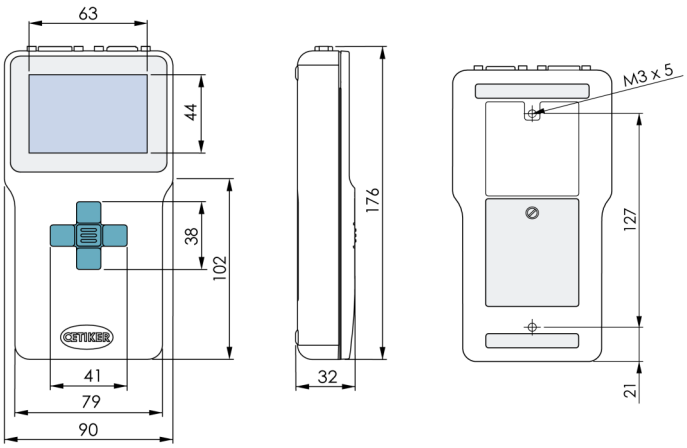
fCAL 1 Closing Force Jaws



fCAL 1 Measuring Device

1 Display | **2** Control panel | **3** Charging port (USB-C) | **4** X5 interface fCAL 1 Closing Force Sensor (CFS) | **5** X3 interface PC / EPC 01 (RS232) | **6** 2x M3 mounting threads for wall mounting | **7** Battery compartment

Dimensions

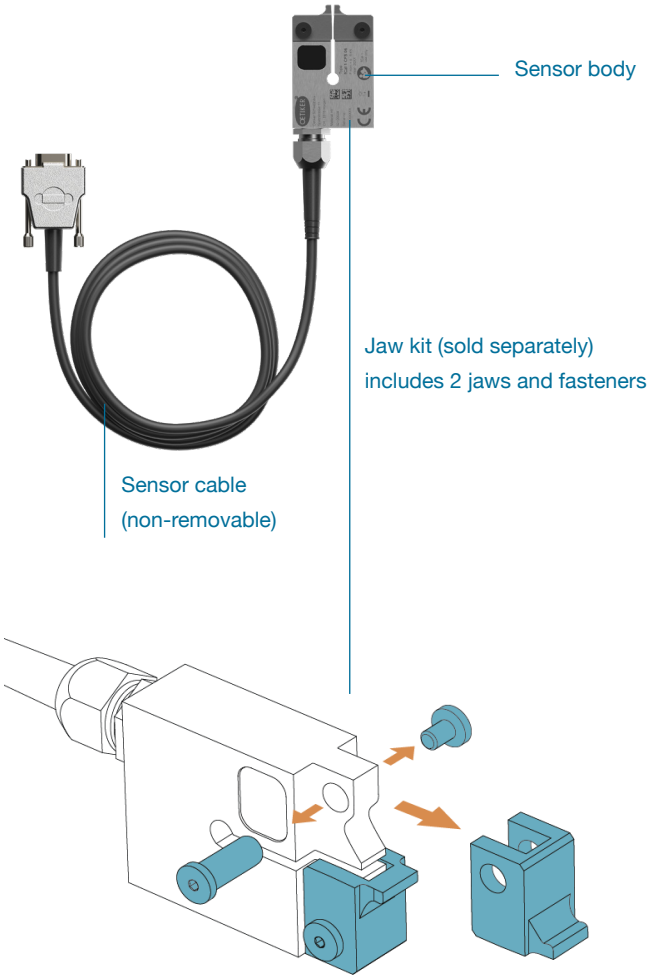


Length	176 mm
Width	90 mm
Height	32 mm
Weight	280 g (without batteries)
Batteries	4x 20g each (80 grams total)

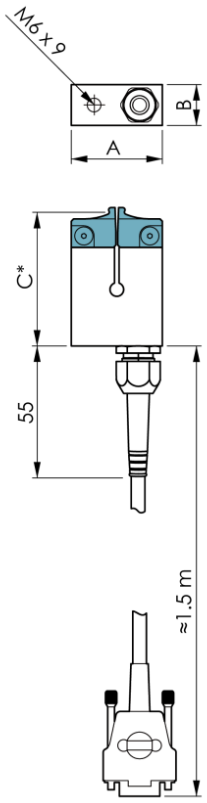
Materials

- Impact-resistant polycarbonate (PC) plastic
- Acrylonitrile butadiene styrene (ABS) plastic
- Tempered glass
- Silicone

fCAL 1 Closing Force Sensor and Jaws



Dimensions



	6 kN Sensor	10 kN Sensor
Length (C*)	59 mm	66.5 mm
Width (A)	40 mm	48 mm
Height (B)	18 mm	22 mm
Weight with cable	350 g	525 g
Sensor cable strain relief length	55 mm	55 mm
Sensor cable strain relief max diameter	9.2 mm	9.2 mm
D-SUB Connector width	32 mm	32 mm
D-SUB Connector height	16 mm	16 mm
Length with connectors	1.559 m	1.5665 m

*consistent for all jaw types

Material

Stainless Steel

Functional critical attributes

	6 kN Closing Force Sensor	10 kN Closing Force Sensor
Sensor type	Strain gauge (DMS) sensor	Strain gauge (DMS) sensor
Measuring range	200-6000 N	200-10 000 N
Operating temperature range	10 °C to 40 °C	10 °C to 40 °C
Calibrated range	1200-6000 N	2000-10 000 N
Altitude max.	2000 m above sea level	2000 m above sea level
Degree of pollution	3 (according to EN 61010-1)	3 (according to EN 61010-1)
Overvoltage category	I (according to EN 61010-1)	I (according to EN 61010-1)
Accuracy	Accurate within ±11 N below 2000 N, and ±26 N over the full measuring range.	Accurate within ±45 N over the measuring range.
Sensor lifecycle	500 000 cycles minimum	500 000 cycles minimum
Product damaging parameters	• large fluctuations in ambient temperature • direct sunlight • humidity above 80% and condensation • excessive dust or debris • salty and wet environmental conditions	

Maintenance attributes

Maintenance cycle
Check the fCAL 1 at least once per shift for externally visible damage and proper function.

Calibration
To maintain the high quality of this measuring instrument, Oetiker recommends that an annual calibration is performed through your nearest Oetiker Service Center.

Measuring device, sensor, or total system can be calibrated. Calibrating the device and sensors independently is recommended to use one Measuring Device with multiple Closing Force Sensors.

Each device, sensor, or system should be re-calibrated after 1 year or 10.000 cycles (whichever happens first).

Maintenance and repair location
Oetiker Service Center

Maintenance and calibration responsibility
The owner of the product

Health and safety critical attributes

See instruction manual for detailed safety instructions.

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Reliable Connections

fCAL 1
Calibration Measurement Unit

Product description

Certifications

EMC compliant

- EU
- Switzerland
- Norway
- United Kingdom
- USA
- Canada
- Mexico
- Brazil
- Japan
- China
- Thailand
- South Korea
- India
- Turkey
- Tunisia
- South Africa
- Puerto Rico
- Hong Kong
- Malaysia
- Taiwan
- India
- Turkey
- Tunisia
- South Africa
- Puerto Rico
- Hong Kong
- Malaysia

Maintenance attributes

fCAL 1 spare parts

32100022	4x AA NiMH rechargeable batteries
32100026	USB-C / USB-C cable
32100057	X3 data cable
08907258	Hex key for 6 kN sensor
08907355	Hex key for 10 kN sensor
32100056	6 kN Sensor jaw bolt
05011715	6 kN Sensor jaw screw
32100079	10 kN Sensor jaw bolt
05007854	10 kN Sensor jaw screw
08906870	Operating instructions
32100017	Battery cover screw

General data

Article numbers

6 kN Closing Force Sensor Jaw Kits

32100038	10 mm Ear Clamp Jaws for force Calibration
32100039	10 mm Ear Clamp Jaws for force and Stroke Calibration
32100040	7 mm Ear Clamp Jaws – Force Calibration
32100041	7 mm Ear Clamp Jaws – Force and Stroke Calibration
32100042	5 mm Ear Clamp Jaws – Force Calibration
32100043	5 mm Ear Clamp Jaws – Force and Stroke Calibration
32100044	PG 168 Type 3 Jaws – Force Calibration
32100045	PG 168 Type 13 Jaws – Force Calibration
32100046	PG 168 Type 13 Jaws – Force and Stroke Calibration
32100047	PG 192 Jaws – Force Calibration
32100048	PG 192 Jaws – Force and Stroke Calibration
32100049	PG 168 Type 3 Jaws – Force and Stroke Calibration
32100050	PG 292 Jaws – Force and Stroke Calibration
32100051	PG 270 Jaws
32100052	PG 268 Jaws – Force Calibration
32100053	PG 268 Jaws – Force and Stroke Calibration
32100054	PG 298 Jaws – Force and Stroke Calibration
32100055	PG 292 Jaws – Force Calibration

10 kN Closing Force Sensor Jaw Kits

32100087	10 mm Ear Clamp Jaws – Force Calibration
32100088	10 mm Ear Clamp Jaws – Force and Stroke Calibration
32100083	12.5 mm Ear Clamp Jaws – Force Calibration
32100084	12.5 mm Ear Clamp Jaws – Force and Stroke Calibration

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