

CHATILLON® DFM Series CADET® CD1 Series

- NOTICE -

This operator's manual may be used for either the CHATILLON® DFM Series or AMETEK CADET® CD1 Series digital force gauges. The setup, operation, calibration and maintenance instructions for these different brands of products are identical.



MODEL NUMBERS & CAPACITIES

CHATILLON® DFM Series

Model	Capacity x Resolution
DFM2	2 lb x 0.002 lb 1 kg x 0.001 kg 10 N x 0.01 N
DFM10	10 lb x 0.01 lb 5 kg x 0.005 kg 50 N x 0.05 N
DFM50	50 lb x 0.05 lb 25 kg x 0.02 kg 250 N x 0.2 N
DFM100	100 lb x 0.1 lb 50 kg x 0.05 kg 500 N x 0.5 N

CADET® CD1 Series

Model	Capacity x Resolution
CD1-002	2 lb x 0.002 lb 1 kg x 0.001 kg 10 N x 0.01 N
CD1-010	10 lb x 0.01 lb 5 kg x 0.005 kg 50 N x 0.05 N
CD1-050	50 lb x 0.05 lb 25 kg x 0.02 kg 250 N x 0.2 N
CD1-100	100 lb x 0.1 lb 50 kg x 0.05 kg 500 N x 0.5 N

Note: Force gauges that use 220V source power for charging will have the suffix "-220V" after the base model number, e.g. DFM2-220V.

AMETEK

- NOTICE -

Force reading accuracy may be affected by a low battery condition. BEFORE using the force gauge for the first time, fully charge the rechargeable NiCd battery. Plug the charger into the gauge's charge jack and into an AC outlet.

Always charge the battery whenever the BAT indicator is highlighted. A minimum charge of 8 hours is recommended.

INTRODUCTION

The CHATILLON® DFM Series (or CADET ® CD1 Series) has been designed to be easy to setup, operate and maintain. The instrument is ideal for tensile or compression measurement. The instrument may be supplied for either 110V or 220V operation. Four base models are available for both the CHATILLON and CADET brands, each model is distinguished by a different capacity. Capacities may be displayed in either lbs, kg or N measurements. The instrument is supplied with a carrying case, battery charger, hex key, extension rod, hook and flat head attachments.

ELECTRICAL SAFETY

These instruments have been assessed against the essential health and safety requirements of the Low Voltage and the EMC Directives listed below. Based on conformity with the listed directives, the DFM and CD1 are compliant with the following:

Directive	Test Standard	
EMC Directive (89/336/EEC)	EN 50081-1 EN 50082-1	EMC Generic Emissions Standard EMC Generic Immunity Standard
Low Voltage Directive (73/23/EEC)	EN 61010-1	Safety Requirement for Electrical Equip

SPECIFICATIONS

Accuracy:	±0.5% of Full Scale	Deflection:	Variable, <0.014-inches (max) at full load
Selectable Units:	lbs, kg, N	Temperature Range:	+40°F to +110°F (+5°C to +45°C)
Overload Capacity:	110% of rated Capacity	Temperature Stability:	0.06% per °F
Overload Protection:	175% of rated Capacity	Power:	115V, 60 Hz, <100 mA 220V, 50-60 Hz, <100 mA
Tare Capacity:	10% of full scale in lb mode	Battery Life (*):	8-10 hours between charges
Display:	LCD, updated 8 times/second	Weight:	1.3 lbs (0.6 kg)
Sampling Rate:	1000 Hz	Warranty:	1 year

HANDHELD SETUP

The DFM/CD1 features a reversible split housing. The DFM/CD1 is factory assembled with the shaft pointed down for stand mounting applications. If the gauge is to be used for handheld testing, it may be desirable to reorient the shaft so that it points upward.

-WARNING -

Extreme care should be taken when removing the housing. Make sure that you do not pull, twist or pinch any of the wires inside the housing.



To change the shaft orientation perform the following:

1. Remove the two hex screws on the backside of the bottom housing using the Hex Key provided with your gauge.
2. Carefully, rotate the top housing 180-degrees making sure not to bind, twist or pull any of the wires.
3. Reassemble the housing, making sure that no wires are pinched between the top and bottom housings.

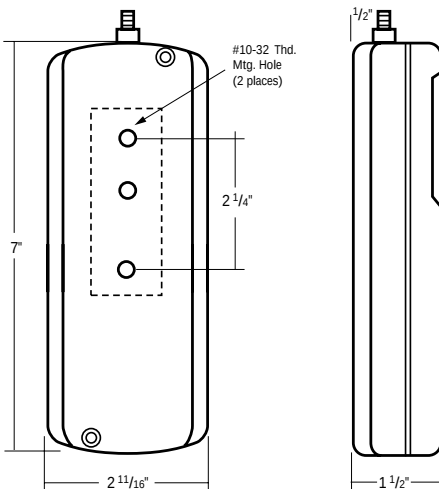
TEST STAND MOUNTING

Two #10-32 tapped holes and a hole for a 3/16-inch dowel pin are provided on the back of the force gauge. These are used for mounting the gauge to a test stand.

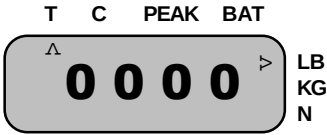


TEST STAND ADAPTER KITS

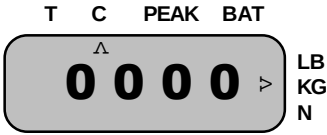
Adapter kits are required when mounting your gauge to a CHATILLON or AMETEK test stand. Please see the Parts List section for part numbers.



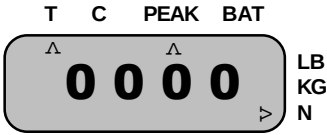
DISPLAY READOUTS



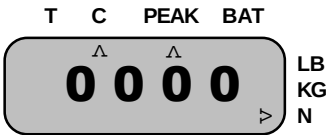
Indicates TENSION in NORMAL Mode measured in lbs.



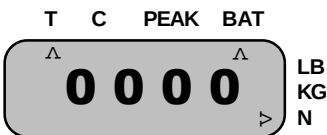
Indicates COMPRESSION in NORMAL mode measured in kg.



Indicates PEAK TENSION mode measured in N.



Indicates PEAK COMPRESSION mode measured in N.



Indicates LOW BATTERY condition. Battery MUST be fully charged whenever a Low Battery Condition occurs.

-WARNING -

Force reading accuracy may be affected by a low battery condition. BEFORE using the force gauge for the first time, fully charge the rechargeable NiCd battery. Plug the charger into the gauge's charge jack and into an AC outlet.

Always charge the battery whenever the BAT indicator is highlighted. A minimum charge of 8 hours is recommended.

BASIC OPERATIONS

Turn Gauge On/Off

Position side switch **ON/OFF**

Select Units of Measure

Select **UNITS** until desired UNIT is highlited
< **LB, KG, N** >

Select Force Type (Display Mode)

Select **PEAK** until desired TYPE is highlited
< **NORM, T-PK, C-PK** >

Zero (Tare) the Displayed Force Value

Select **ZERO** to tare and reset the displayed value.

Zero All Force Values

Select and Hold ***** and then select **ZERO**. This resets and tares all three display modes simultaneously.

Reset Current Peak Reading

Select ***** This does NOT change the tare value.

-NOTICE -

Always apply load axially. Applying load on an angle or ecentric loading may cause an erroneous force reading.

OVERLOAD CONDITIONS

Extreme care should be taken to ensure that you do not overload the loadcell. Overload protection up to 175% of the gauge's capacity is provided in compression mode only, however, any overload condition may damage your gauge. If you do overload the gauge, the display will flash with "0000" or " _ _ _ _ ". If your gauge displays "-EP" "-EPP" or "-EL", contact your AMETEK or CHATILLON representative for service.

MAINTENANCE & CALIBRATION

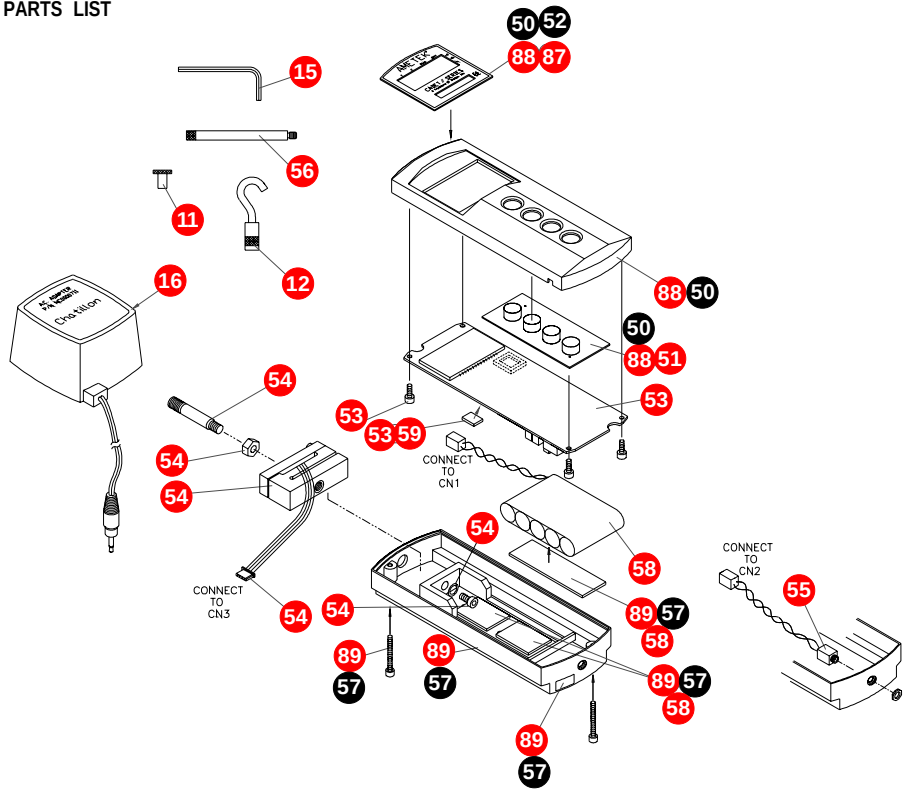
You should routinely check and verify gauge accuracy by suspending a known weight from a hook adapter. If calibration is required, please contact AMETEK or your local AMETEK representative.

To maintain optimum performance, we recommend a factory calibration every 12 months.

- WARNING -

This force gauge is equipped with a rechargeable battery. The battery is recyclable. It may be unlawful to dispose of this battery into the municipal waste stream. Please check with yor local solid waste officials for details on how to properly dispose of the battery.

PARTS LIST



TEST STAND ADAPTER KITS

Adapter kits are required when mounting your gauge to a CHATILLON or AMETEK test stand. Please see the Parts List section for part numbers.

Kit No.	Chatillon Stand	AMETEK Stand
NC000985	TCM201	ACCUFORCE 201
NC000985	TCD200	ACCUFORCE 200
LTCK-2	LTS	MLTS
LTCK-2	LTC	MLTS
HTCK-6	HTC	MHTC

Model DFM and CD1 Series Parts Listing

NOTE: Items with "*" after the Ref. No. are not shown.

Ref. No.	Part No.	Description	DFM 2	DFM 10	DFM 50	DFM 100	CD1 002	CD1 010	CD1 050	CD1 100
11	SPK-FMG-011A	Adapter, Flat	1	1	1	1	1	1	1	1
12	SPK-FMG-012A	Adapter, Hook	1	1	-	-	1	1	-	-
	SPK-FMG-012B	Adapter, Hook	-	-	1	1	-	-	1	1
15	SPK-FMG-015	Hex Key	1	1	1	1	1	1	1	1
16	SPK-FMG-016A	Battery Charger, 115V	1	1	1	1	1	1	1	1
	SPK-FMG-016B	Battery Charger, 220V	1	1	1	1	1	1	1	1
50	SPK-DFM-050A	Top Case Assembly	1	-	-	-	-	-	-	-
	SPK-DFM-050B	Top Case Assembly	-	1	-	-	-	-	-	-
	SPK-DFM-050C	Top Case Assembly	-	-	1	-	-	-	-	-
	SPK-DFM-050D	Top Case Assembly	-	-	-	1	-	-	-	-
51	SPK-DFM-051	Keypad	1	1	1	1	1	1	1	1
52	SPK-DFM-052A	Lens Assembly	1	-	-	-	-	-	-	-
	SPK-DFM-052B	Lens Assembly	-	1	-	-	-	-	-	-
	SPK-DFM-052C	Lens Assembly	-	-	1	-	-	-	-	-
	SPK-DFM-052D	Lens Assembly	-	-	-	1	-	-	-	-
53	SPK-DFM-053	Printed Circuit Board	1	1	1	1	1	1	1	1
54	SPK-DFM-054A	Loadcell Assembly	1	-	-	-	1	-	-	-
	SPK-DFM-054B	Loadcell Assembly	-	1	-	-	-	1	-	-
	SPK-DFM-054C	Loadcell Assembly	-	-	1	-	-	-	1	-
	SPK-DFM-054D	Loadcell Assembly	-	-	-	1	-	-	-	1
55	SPK-DFM-055	Power Jack Assembly	1	1	1	1	1	1	1	1
56	SPK-DFM-056	Extension Rod	1	1	1	1	1	1	1	1
57	SPK-DFM-057	Bottom Case Assembly	1	1	1	1	-	-	-	-
58	SPK-DFM-058	Battery Pack Assembly	1	1	1	1	1	1	1	1
59	SPK-DFM-059	EPROM, Programmed	1	1	1	1	1	1	1	1
61*	SPK-DFM-061	Carrying Case	1	1	1	1	-	-	-	-
87	SPK-CD1-087A	Lens Assembly	-	-	-	-	1	-	-	-
	SPK-CD1-087B	Lens Assembly	-	-	-	-	-	1	-	-
	SPK-CD1-087C	Lens Assembly	-	-	-	-	-	-	1	-
	SPK-CD1-087D	Lens Assembly	-	-	-	-	-	-	-	1
88	SPK-CD1-088A	Top Case Assembly	-	-	-	-	1	-	-	-
	SPK-CD1-088B	Top Case Assembly	-	-	-	-	-	1	-	-
	SPK-CD1-088C	Top Case Assembly	-	-	-	-	-	-	1	-
	SPK-CD1-088D	Top Case Assembly	-	-	-	-	-	-	-	1
89	SPK-CD1-089	Bottom Case Assembly	-	-	-	-	1	1	1	1
90*	SPK-CD1-090	Carrying Case	-	-	-	-	1	1	1	1

PRODUCT WARRANTY

This instrument is warranted against defects in workmanship, material and design for one (1) year from the date of delivery to the extent that AMETEK will, at its sole option, repair or replace the instrument or any part thereof which is defective provided, however, that the warranty shall not apply to instruments subjected to tampering or abuse, or exposed to highly corrosive conditions.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES WHETHER EXPRESS OR IMPLIED AND AMETEK HEREBY DISCLAIMS ALL OTHER WARRANTIES, INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY. AMETEK SHALL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING, BUT NOT LIMITED TO, ANY ANTICIPATED OR LOST PROFITS.

This warranty is voidable if the purchaser fails to follow any and all instructions, warnings or cautions in the instrument's operation manual.

If a manufacturing defect is found, AMETEK will replace or repair the instrument or replace any defective part thereof without charge; however, AMETEK's obligation hereunder does not include the cost of transportation which must be borne by the customer. AMETEK assumes no responsibility for damage in transit, and any claims for such damage should be presented to the carrier by the purchaser.

AMETEK

TEST AND CALIBRATION INSTRUMENTS

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