

Operating Instructions

DIGITAL LENGTH COMPARATOR

Model: 34-8507 (CT-384D)

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TABLE OF CONTENTS

I. GENERAL INFORMATION	3
II. RELATED USER DOCUMENTATION	4
III. ASSEMBLY	4
IV. OPERATION	5
V. <i>USE OF ELECTRONIC DIGITAL INDICATOR</i>	3
VI. <i>ELECTRONIC DIGITAL INDICATOR BATTERY</i>	4
VII. SPECIFICATIONS	5
FIGURE 1- Digital Length Comparator	9
PARTS LIST	10

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DIGITAL LENGTH COMPARATOR MODEL 34-8507 (CT-384D)

I. GENERAL INFORMATION

The 34-8507 (CT-384D) series **Digital Length Comparator** is a device used for measuring the length changes of cement paste, mortar and concrete specimens, in accordance with ASTM and AASHTO specifications. The precision unit consists of a sensitive electronic digital indicator mounted on a sturdy, dual post construction frame. The movable and stationary anvils are shaped to receive the reference pins, which are cast into the ends of the test specimen bars. An Invar steel reference bar is supplied with the instrument.

The **Digital Length Comparator** is primarily designed for determining the change in length accurate to 0.0001" or 0.002 mm of a specimen bar of gauge length 10" (254 mm). For this purpose the accurate length of the reference bar is not required. If the instrument is used for measuring the accurate initial length of the test specimen bar, the accurate length of the reference bar is required. The reference bar supplied with the instrument is 11-5/8" (295.27 mm) $\pm 1/16"$ (1.5 mm) long as specified by ASTM C-490. The length, accurate to 0.0001" or 0.002 mm, may be determined using any suitable device.

The electronic digital indicator has resolution of .0001" (0.002 mm) with accuracy $\pm$ one resolution and range up to .6" (15.24 mm), inch/mm readings. The indicator is powered by four 1.4 volt batteries with 250 hours of continuous operation.

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II. RELATED USER DOCUMENTATION

These operating instructions do not contain all the necessary information on the specific test procedures. Please refer to ASTM C-151, C-157, C-227, C-490, C-531, AASHTO T-107 or T-160 for additional testing information.

III. ASSEMBLY

- A. With screw provided (#1 Fig. 1), mount the digital indicator (#2) to the top surface of the support arm (#15).
- B. Two guides (#5) are supplied with the instrument. Attach one guide to the contact point (#3) on the end of the indicator stem. Attach the other guide to the lower contact point on the top of the knurled spindle shaft (#6) located on the base of the device.
- C. Remove the hardened reference bar from its storage position by loosening the screw (#14) and raising the storage block (#13) on the upright shaft.
- D. Set the reference bar between the indicator contact point and the lower contact point. If necessary, in order to position the reference bar in place, release lock nut (#7) and turn the adjusting knob (#6) to raise or lower the knurled spindle on the base. Tighten lock nut.
- E. Loosen screw (#4) and lower the guide on the indicator contact point over the hub of the reference bar. Tighten screw (#4) to lock in place.
- F. Loosen screw and raise the guide (#5) on the lower contact point over the lower hub of the reference bar. Tighten screw to lock in place.

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IV. OPERATION

- A. Adjust the lower contact point spindle until the indicator stem is extended all the way.
- B. Loosen lock nut (#7) and turn the adjusting knob (#6) so as to move the lower contact point up slightly until the dial indicator needle moves to show .0010. Lock the spindle by tightening the lock nut (#7).
- C. Press and release ON/CLR to clear display to zero. Tighten lock screw.
- D. Remove the reference bar by depressing the indicator lever, which raises the contact point. Return the bar to its storage position.
- E. Take initial reading of specimen bar.
 1. Mount the specimen bar below the dial indicator stem in the place of the reference bar with the two gauge studs of the specimen against the contact points.
 2. Rotate the specimen slowly while measuring the length. If rotations cause a change in the dial reading, take the minimum reading of the indicator.
- F. After curing the specimen in the autoclave, mount it again on the **Length Comparator** and take the final reading as before.
- G. Take the difference between the initial and final readings to get the change in length.

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V. USE OF ELECTRONIC DIGITAL INDICATOR

1. **ON/OFF** - To turn indicator “on,” press ON/CLR and release when CLR appears. To turn indicator “off,” press and release OFF.
2. **CLEAR** - To clear display to zero, press and release ON/CLR.
3. **HOLD** - To turn MAX HOLD “on or off,” press and release HOLD.
4. **IN/MM** - To change from inch to millimeter or millimeter to inch:
 - Press and hold “2nd” until “2nd” appears on display and then release.
 - Press and release “.” within three seconds.

Note: MM for millimeter or IN for inch will appear on bottom of display.

A number will appear in the right side of display:

2 = .0001 3 = .00025 4 = .0005 5 = .001

- Press and release CHNG and “2nd” simultaneously to save.

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5. **TOTAL RESET** - To clear all settings and return to factory set defaults:

·Press and hold “2nd” until “2nd” appears on the bottom of display and then release.

·Press and release ON/CLR within three seconds.

·Press and release CHNG within three seconds.

6. **TRAVEL REVERSE** - To change travel direction of reading:

·Press and hold “2nd” until “2nd” appears on bottom of display and then release.

·Press and release HOLD within three seconds.

Note: Arrow under measurement mode will show positive direction of spindle travel.

7. **AUTO-OFF** - To turn AUTO-OFF on or off:

·Press and hold “2nd” until “2nd” appears on bottom of display and then release.

Press and release OFF with three seconds.

Note: An hourglass will appear on left side of display if AUTO-OFF feature is active.

8. **CHANGING RESOLUTION** - To change resolution:

·Press and hold “2nd” until “2nd” appears on bottom of display and then release.

·Press and release ON/CLR within three seconds.

·Press and release HOLD within three seconds.

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VI. ELECTRONIC DIGITAL INDICATOR BATTERY

- A. Battery Specifications - Zinc/Air or Mercury; Size 675, 1.4 V, dia-meter 11.6 x 5.35 mm; 250 hour continuous operation
- B. Replacement - L675ZA, McMaster 7604K71, IEC NR44, or NEDA 1127MD
- C. Installation - Install all four batteries into clip with only + side up.

VII. SPECIFICATIONS

Frame	Metal, double-post construction; rust resistant finish
Anvils	One movable and one stationary; shaped to receive contact points in sample bars
Electronic Digital Indicator	English/Metric – .6" x .0001" / 15.24 x 0.002 mm
Reference Bar	Invar metal
Dimensions	7-1/2" w. x 7-3/4" d. x 17-3/4" h. (190 x 197 x 4551 mm)
Weight	Net 13-1/2 lbs. (6.1 kg)

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PARTS LIST

Item	Part No.	Description	Req'd.
1	9508-0021	1/4 - 20 x 5/8 Soc. Hd Cap Scr.	1
2	88-4200 (LC-26)	Dial Indicator	1
3	3444-0003	Contact	2
4	9519-0007	6-3/4 x 5/16 Knurled Screw	2
5	3444-0004	Guide	2
6	3444-0015	Adjusting Knob Ass'y	1
7	3444-0006	Lock Nut	1
8	9302-0022	Soiltest Logo	1
9	3444-0013	Base	1
10	9511-0014	1/ 2 - 20 x 1-1/4 Socket Hd Cap Scr.	2
11	3444-0011	Column	2
12	3444-0008	Set Master Ass'y.	1
13	3444-0014	Storage Block	1
14	9519-0004	10 - 32 x 1/2 Knurled Hd. Scr	1
15	3444-0002	Threaded Stud	2
16	3444-0012	Support Arm	1
17	9302-0035	Soiltest Logo	1
18	1212-0014	Lifting Lever Ass'y.	1

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