
OPERATION AND CALIBRATION INSTRUCTIONS

TEST MARK INDUSTRIES
DIGITAL RETROFIT

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IMPORTANT – PLEASE READ BEFORE OPERATING TESTING MACHINE

1. Inspect to see that no visual damage has occurred during shipping. If you see any damage, contact Test Mark right away.
2. Check the equipment you received with your packing list.
3. It is recommended that the machine be located in an area where the atmosphere is free from acidic or contaminating fumes, which could possibly accelerate corrosion to machine surfaces or electrical contacts.
4. Position the machine leaving sufficient space at the rear and sides for calibration or service work.
5. The machine should be leveled.
6. Clean off machined surfaces that have been coated with rust preventative using any suitable non-corroding safety solvent. Wipe machined surfaces with a clean, oil soaked rag to minimize rusting.
7. When adding or changing oil, use only **Dextron II or Dextron III automatic transmission fluid.**

TABLE OF CONTENTS

FORWARD	1
1.0 INTRODUCTION	2
1.1 <i>DI Peak Load Indicator Accessories</i>	2
2.0 THE KEYS AND SCREEN DISPLAY	3
2.1 The <SET ENTER> Key	3
2.2 The <MENU/UP ARROW> Key	3
2.3 The <ZERO/DOWN ARROW> Key	3
2.4 DI Peak Load Indicator and Screen Display	4
3.0 SETTING LOAD RESOLUTION, FULL SCALE LOAD AND CALIBRATION	5
4.0 OPERATION	6
4.1.1 Setting the Engineering Units	6
4.1.2 Running a Test.....	6
5.0 ELECTRICAL/MECHANICAL DATA	7
5.1 User Connections	7
5.2 Power (DC) Input	7
5.3 Dimensions	8
5.4 Troubleshooting.....	9
6.0 STATEMENT OF WARRANTY	10

LIMITED WARRANTY

Test Mark, Inc. (The Company) warrants that hardware and software/firmware products manufactured by The Company, when properly installed, used, and maintained, will be free from defects in material and workmanship. Test Mark, Inc. warrants a) the SOFTWARE/FIRMWARE will perform Substantially in accordance with the accompanying written materials and b) the HARDWARE will be free from defects in materials and workmanship under normal use and service for a period of (1) one year from date of receipt. The Company's obligations under this warranty will be limited to repairing or replacing, at The Company's option, the part or parts of the hardware and software/firmware which prove defective in material and workmanship within one (1) year from the date of delivery, provided the buyer gives The Company prompt notice of any defect or failure and satisfactory proof thereof. Products may be returned to The Company's factory. The Company will deliver replacements for defective products to the Buyer, freight prepaid to the destination provided for in the original order. With respect to any product or part thereof not manufactured by The Company, only the warranty, if any given by the manufacturer thereof, will apply. It is the responsibility of the Buyer to determine the suitability and safety of this product for any particular purpose. The Company disclaims all liability for incidental or consequential damages. In no case will The Company's liability exceed the original purchase price. THE COMPANY MAKES NO OTHER OR FURTHER WARRANTY, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE OR WARRANTY OF MERCHANTABILITY.

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DI Peak Load Indicator LICENSE AGREEMENT

This is a legal agreement between you, the end user, and Test Mark, Inc (The Company). By using ***DI Peak Load Indicator*** you are agreeing to be bound by the terms of this agreement.

- 1.0 License Grant.** The Company hereby grants the end user a personal, nontransferable and non-exclusive license to use one copy of the software/firmware and related documentation on a single indicating system.
- 2.0 Intellectual Property Rights.** The Company is the sole owner of all right, title and interest to the ***DI Peak Load Indicator*** and all copyrights, trademarks, and trade secrets therein. United States copyright laws and international treaty provisions protect the Company. Therefore, the end user must treat the software/ firmware like any other copyrighted material and may not copy the written materials accompanying the ***DI Peak Load Indicator***.
- 3.0 Restrictions.** This Agreement and the Licensed Software/Firmware may not be assigned, Sub-licensed or otherwise transferred by the Customer. The end user must not reverse engineer, decompile, or disassemble the Licensed Software/Firmware or attempt to do so. The Licensed Software/Firmware may not be modified without the written consent of The Company.
- 4.0 Termination.** The Company may terminate the license contained in this Agreement by written notice upon any breach of any term by the end user. Upon termination, the end user shall immediately return the ***DI Peak Load Indicator*** to the factory. Section 2.0 of this Agreement shall survive termination of this Agreement.

- 5.0 Purchase by Governmental Agencies.** If the end user is a federal, state or local governmental agency or unit, then as a matter of contract, the end user will accord The Company and the Licensed Program the same rights The Company would have had under the Copyright Act of 1976, as amended.
- 6.0 Governing Law.** This Agreement shall be governed by and construed in accordance with the laws of the Commonwealth of Massachusetts.

FOREWARD

DI Peak Load Indicator has been designed and constructed with great care in every phase of assembly. In order to insure reliability, both the mechanical and electrical components have been built with the best available materials. The sections of this manual provide description and instruction on the operation and maintenance of the mechanical, electrical and software components.

You as a customer are our most valued asset. We take pride in our systems and are proud that you have become an owner. We welcome your comments about our products and wish that you expressed them. It is the only way that we can continue to build the best available test systems to satisfy your needs. Thank-you for your support.

HOW TO USE THIS MANUAL

This manual is intended to educate the customer on the capabilities, operation and maintenance of the **DI Peak Load Indicator**. In addition, it is to be used as a supplement for any information supplied by the load frame manufacturer. Maintenance procedures specified by the load frame manufacturer should be followed unless specifically noted herein. Read this manual and become familiar with the operation of your test machine prior to operating the **DI Peak Load Indicator**.

TECHNICAL SUPPORT

If a problem should occur with your testing machine:

1. Check that all external inputs are properly connected.
2. Call the supplier/manufacturer of your test machine.
3. Call Test Mark's technical support at (330) 426-2200 (9AM to 4PM EST).

1.0 INTRODUCTION

The **DI Peak Load Indicator** is a low cost load indicator designed for materials testing machines. Features include an Auto-Test-Reset mode for hands free operation, automatic sample break detection and three points of calibration for maximum accuracy, which exceeds ASTM E4. Load rate indication is also offered as an option.

DI Peak Load Indicator is ideal for:

- Beam Bend Testing
- Concrete Cylinder Testing
- Cement Cube Testing
- Force Calibration
- Remote On-Site Testing
- Quality Control
- Product Evaluation
- Proof Testing

Features:

- Display Live Load and Peak Load numerically.
- Select engineering units of Lb, N, KN, and Kg.
- Three software programmable calibration points with password protection (No need to turn a potentiometer to adjust calibration.). Accuracy exceeds ASTM E4.
- Sample Break Detector set for 50% of peak load.
- Auto-Test-Reset automatically "readies" the indicator for the start of the next test without requiring operator interaction.
- Optional load rate indication in force units per sec.
- 1x16 LCD with 0.38" high characters.
- Three key tactile keypad.

1.1 **DI Peak Load Indicator Accessories**

- 1,000, 2,500, 5,000 10,000 psi pressure transducers with cable pre-wired for the pi Indicator.
- Load cells of various capacities.

2.0 THE KEYS AND SCREEN DISPLAY

2.1 The <SET ENTER> Key

The ENTER key performs the following functions.

- Changes engineering units (KN,KG,LB,N)
- Accepts/assigns the value in a data entry field to that field.

2.2 The <MENU/UP ARROW> Key

- Selects the calibration menu for setting load resolution (**RES**), full scale (**FS**) load and calibration.
- Increases the value of a numeric digit.

1.3 The <ZERO/DOWN ARROW> Key

- The ZERO key performs the following functions.
- Defines a new zero load.
- Places the Indicator Test Status in Ready Mode.
- Clears out the previous test results from the test buffer and initializes the indicator for the next test.
- **Make sure the previous test result was recorded prior to pressing ZERO or it will be lost.**
- Decreases the value of a numeric digit.

2.4 DI Peak Load Indicator Keypad and Screen Display.

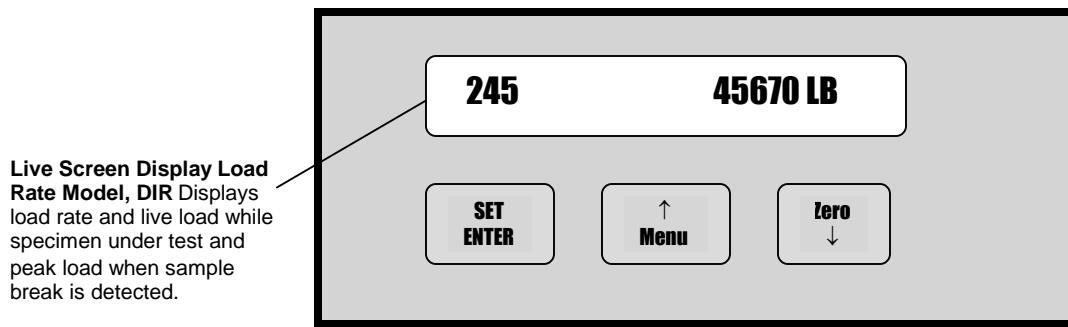
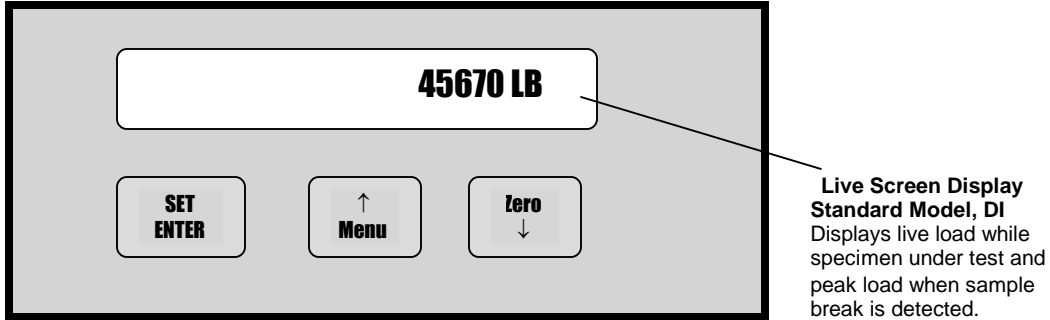


Figure 2.1 - *DI Peak Load Indicator* Keypad and Screen Display.

3.0 SETTING LOAD RESOLUTION, FULL SCALE LOAD AND CALIBRATION

**LOAD CELL REQUIRED FOR CALIBRATION
CALIBRATION SHOULD BE PERFORMED
BY A CERTIFIED CALIBRATION CO.**

- 1) Press the <MENU> key from the Live Screen. The screen display changes to: RES:
- 2) Use the UP and DOWN ARROW keys to change the first place in the resolution.
- 3) Press <ENTER> once to set the place.
- 4) Repeat steps 2-3 until all places in the number are defined. Then press <ENTER> to set the resolution.

"FS" should now appear on the screen.

Note: Full Scale load is used only to define start test threshold, which is set to 0.5% of full scale.

- 5) Use the UP and DOWN ARROW keys to change the first place in full scale.
- 6) Press <ENTER> once to set the place.
- 7) Repeat steps 5-6 until all places in the full scale number are defined. Then press <ENTER> to set full scale.

The screen will now read "**MENU)CAL ENT)ESC**". Press <ENTER> to exit to the Live Screen or <MENU> to proceed to calibration.

Note: The DI Peak Load Indicator requires three calibration points. All three-calibration points MUST be used. The first calibration point should be set at zero load, the second calibration point at low load (5% of full scale load) and the third calibration point at or near full scale load.

Calibration is password protected. At this point you will need to enter the password.

- 8) After entering the password successfully the screen will read "**ENT) Set PT1**". Unload the machine and press <ENTER> to set the zero load calibration point.
- 9) The screen will now read "**ENT) Set PT2**". Load the machine to the second calibration point then press <ENTER>. Note the load value for the second calibration point.
- 10) The screen will now read "**ENT) Set PT3**". Continue loading the machine to the third calibration point then press <ENTER>. Note the load value for the last calibration point.
- 11) The screen will now read "**PT1:**". Enter a value of zero for the first calibration point.
- 12) The screen will now read "**PT2:**". Enter the load value for the second calibration point. Remember that the UP/DOWN ARROW keys change place values just like for full-scale load.
- 13) The screen will now read "**PT3:**". Enter the load value for the last calibration point. Remember that the UP/DOWN ARROW keys change place values just like for full-scale load.

Calibration is complete. You are now ready to verify the load readings.

4.0 OPERATION

Note that the unit must be calibrated prior to running any tests. See Section 3.0 for the calibration procedure.

4.1.1 Setting the Engineering Units

Press the <ENTER> key from the Live Screen.
The four possible values for engineering units are KN, KG, LB, and N.

4.1.2 Running a Test

There are two modes, manual mode and hands free mode, available for running a test. Under manual mode, the operator presses <ZERO> prior to each test to remove any tare weight. With hands free mode, the operator zeros the load once prior to running a batch of samples. Then three seconds after the completion of the previous test, the pi Indicator begins waiting for the load to exceed the threshold (0.5% of Full Scale), which signals the beginning of the next test. During a test, the pi Indicator will continue monitoring for peak load until the load decreases below 50% of peak load. Once the load drops below the 50% peak point, the test ends and the peak load will be displayed on the screen. The peak will remain on the screen until a) <ZERO> is pressed or b) a new test is started.

Note: Before <ZERO>ing the load make sure that the piston is floated and the loading platen is close to the specimen.

5.0 ELECTRICAL/MECHANICAL DATA

5.1 User Connections

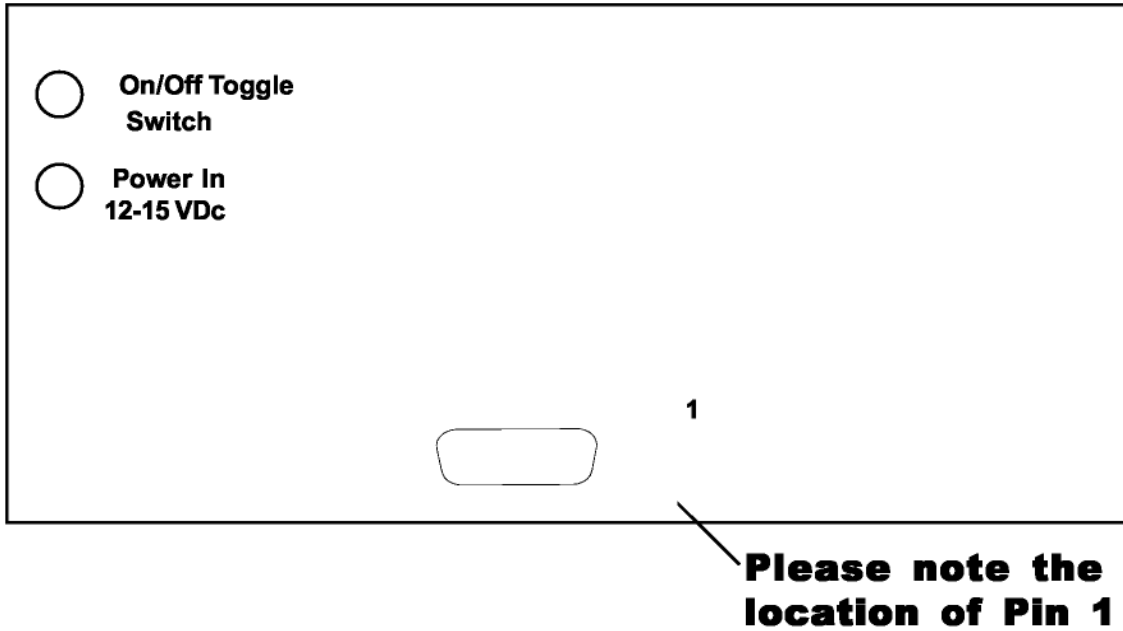


Figure 5.1.1 DI Peak Load Indicator Rear Connection Panel

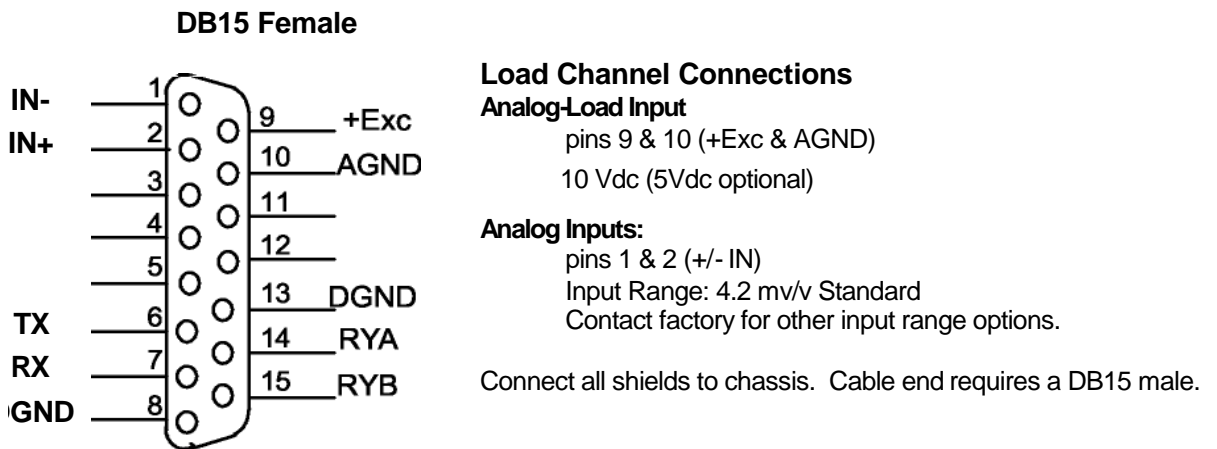


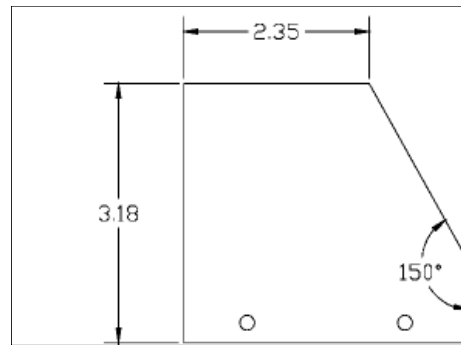
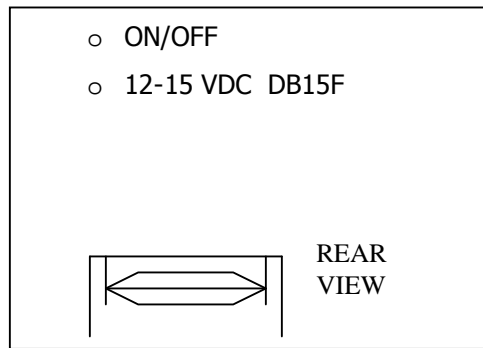
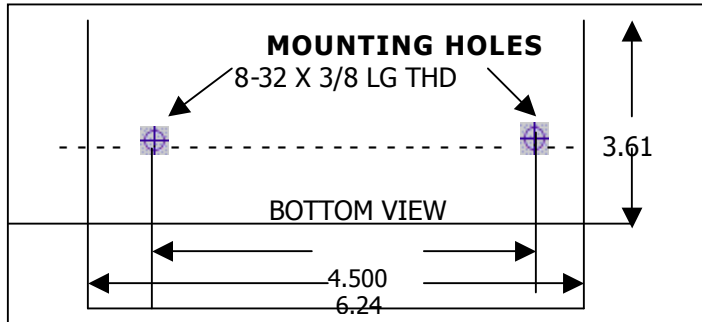
Figure 5.1.2

5.2 Power (DC) Input

The *DI Peak Load Indicator* requires a 12-15Vdc unregulated input voltage.

Contact Test Mark if the factory supplied power source is not used.

5.3 Dimensions



5.4 Troubleshooting**CORRECTING MINOR PROBLEMS**

Some of the most common minor problems and their remedies are listed:

PROBLEM	CAUSE	REMEDY

STATEMENT OF WARRANTY

Test Mark Industries warrants all new testing machines, testing apparatus and supplies manufactured by Test Mark Industries against defects in workmanship and materials for a period of 24 months from the original date of shipment, provided the equipment has been properly installed, maintained and operated in accordance with installation and operating instructions. This limited and exclusive remedy does not cover normal wear and tear. The Test Mark Industries manufactured product must be free from accident, damage by fire, water or act of God to be eligible for warranty.

Test Mark Industries will repair, replace or credit at Test Mark Industries' option defective product or component parts. When repair can be accomplished by exchange of a component part, the customer may be required to remove the part of modular component and install the exchanged part.

Warranty does not cover expenses, either direct or indirect, that may arise from the use or the inability to use Test Mark Industries products, or the secondary owner in the event of resale.

Products not manufactured by Test Mark Industries will carry the warranty of the original manufacturer. Under no circumstances shall Test Mark Industries be liable for any injury, loss, or damages, whether direct or indirect, incidental or consequential, arising out of the use of, or inability to use the products described herein.

This exclusion of liability for loss or damages, whether direct or indirect, incidental or consequential, shall apply to all claims whether sounding in contract, warranty, tort including both negligence and strict liability, or any other basis of liability.