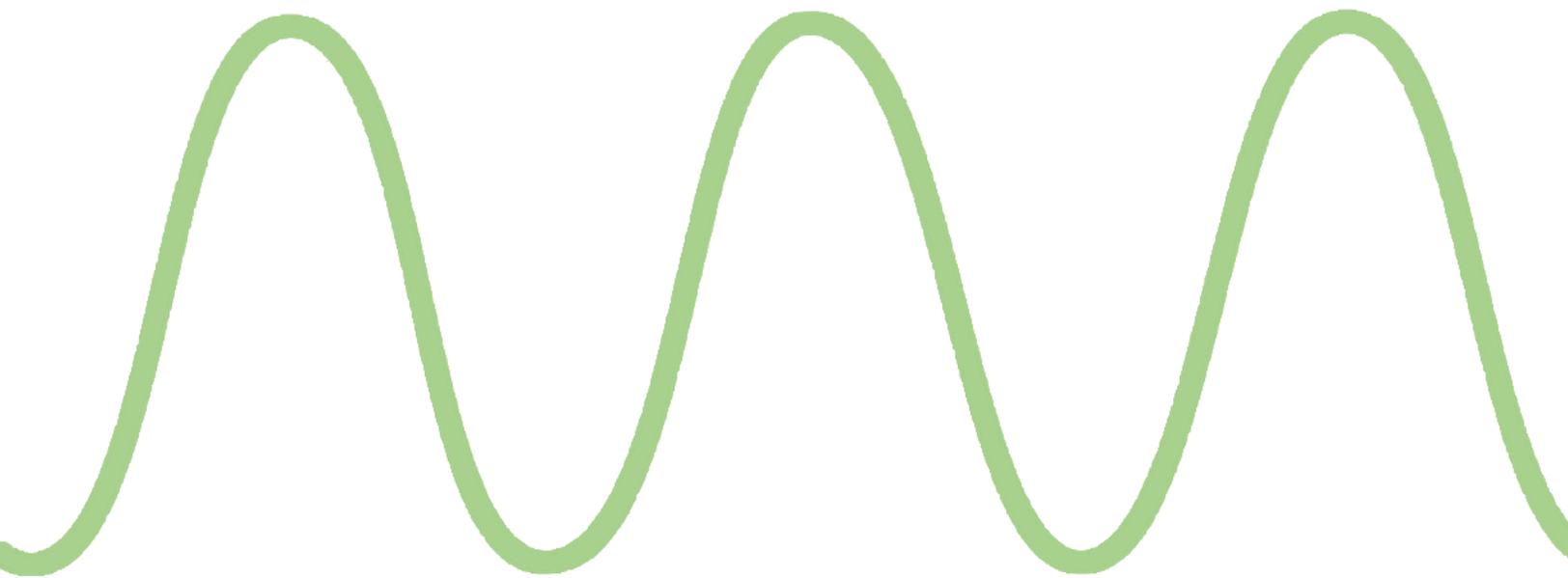


DONART ELECTRONICS
DUCTILITY TESTER MANUAL



User's Guide

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WHAT YOU MUST DO:

You must return the defective item postpaid within sixty (60) days of the software's original delivery to you, and we must receive it within seventy-five (75) days of delivery. You must either insure the defective item being returned or assume the risk of loss or damage in transit. Address all warranty claims to: Don art Electronics, Inc., P. O. Box 27, McDonald, PA 15057 USA.

OTHER CONDITIONS:

This warranty allocates risks of product failure between you and DONART. DONART'S software

pricing reflects this allocation of risk and the limitations of liability contained in this Warranty. The warranty set forth above is in lieu of all other express warranties, whether oral or written. The agents, employees, distributors and dealers of DONART are not authorized to make modifications to this warranty, or additional warranties binding on DONART. Accordingly, additional statements such as dealer advertising or presentations, whether oral or written, do not constitute warranties by DONART and should not be relied upon.

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SOFTWARE LICENSE

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In accepting this system and software, it is agreed that the purchaser will maintain the design of both hardware and software confidential except as necessary to train operators and operate the system.

COMMERCIAL SOFTWARE SUPPLIED WITH THIS SYSTEM

All commercially supplied software, if accepted, shall bind the user to the terms of the licensing agreement supplied by this software. Donart has purchased and supplied such software as was considered necessary or convenient for proper system operation. Such software has been supplied complete with instructions and license.

SAFETY PRECAUTIONS

This tester is a complex measuring system composed of a number of independent instruments and devices operated directly from or through appropriate transformers connected to a main AC power line source. Internal wiring as well as components and wiring internal to the various instruments represent potential electrical shock hazard to personnel. The instrument should not be installed or operated until all personnel concerned with installation, operation and maintenance are made aware of these potential hazards. In addition to the suggestions contained herein, all local electrical and mill codes should be carefully adhered to by properly trained personnel concerning the installation, operation and maintenance.

HAZARDOUS VOLTAGES

The exact reaction to an electrical shock can range from mild annoyance or discomfort to death. Effects of an electrical shock depend on the source of the shock, the physical condition of the individual encountering the shock, the length of time encountered, how good the electrical contact is and the individual's natural reaction to the shock among other variables. In addition to the hazard of the shock to the person receiving it, there is also the possibility of personal injury due to the physical reaction in attempting to quickly escape from the contact. As an example, voluntary or involuntary reaction to the shock can cause an individual to strike his head or other parts of his body against a cabinet or physical obstruction causing physical injury or death in addition to the specific damage caused by the shock.

In general, persons wearing pacemakers or other electrical or electronic life aid devices should not perform maintenance or operate equipment using line voltage as a primary power source. Since even mild electrical shocks can disrupt the bodies normal nerve messages, persons with nervous disorders or heart conditions should not maintain or operate this equipment.

ABOVE NORMAL BODY TEMPERATURES

Under normal operating conditions, only a few of the components in the instrument are hot enough to be uncomfortable to touch or possibly cause burns. Jerking away or

otherwise reacting to contact with these parts could cause injury to parts of the body coming in contact with the cabinet or other physical obstructions. Allow the instrument to cool before performing maintenance.

In general, both transformers and motors operate normally at higher than body temperatures and contact with these without proper thermal protection should be avoided. In the event of equipment malfunctions or failure of parts, higher than normal temperatures could result in not only the above-named components, but additionally in wires, resistors and other normally cool parts. In the case of equipment malfunctions, exercise extra care to avoid the possibility of contact with above body temperature parts.

AMBIENT TEMPARTURE

The Magnetics Test Console contains electronic circuitry; some portions of which are by nature temperature sensitive. The system will not maintain its full accuracy over a large temperature range. The ideal location for the unit is in an air-conditioned room. It is recommended that an attempt be made to maintain the ambient temperature at 72°F (22.2° C), plus or minus 2°F (1.0°C). The instrument should be turned on for at least 1 hour for stabilization prior to any measurement.

1 Getting Started

Introduction

The Donart Electronics Ductility Tester contains all the necessary instrumentation for performing ductility tests in accordance with ASTM A720.

The system uses custom designed software for bending and recording number of bends.

2 Installation

Ductility Tester Setup

The Ductility Tester desk comes mostly assembled with all signal and power cables connected so the only installation is to install the computer system and read the following overview to identify system components. Check all wires for fraying and components for damage to prevent further harm to the system.

Ductility Tester Front View

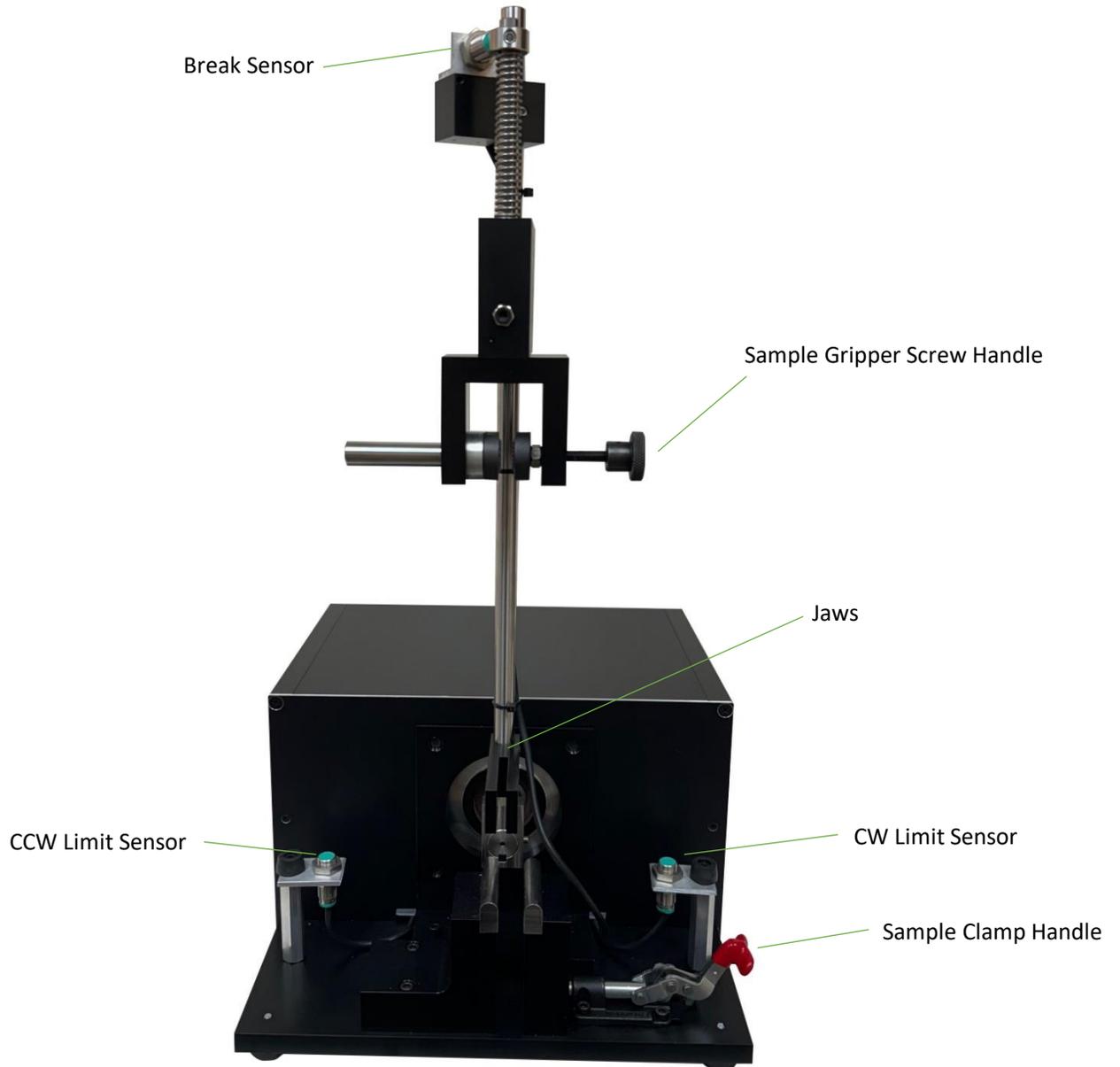


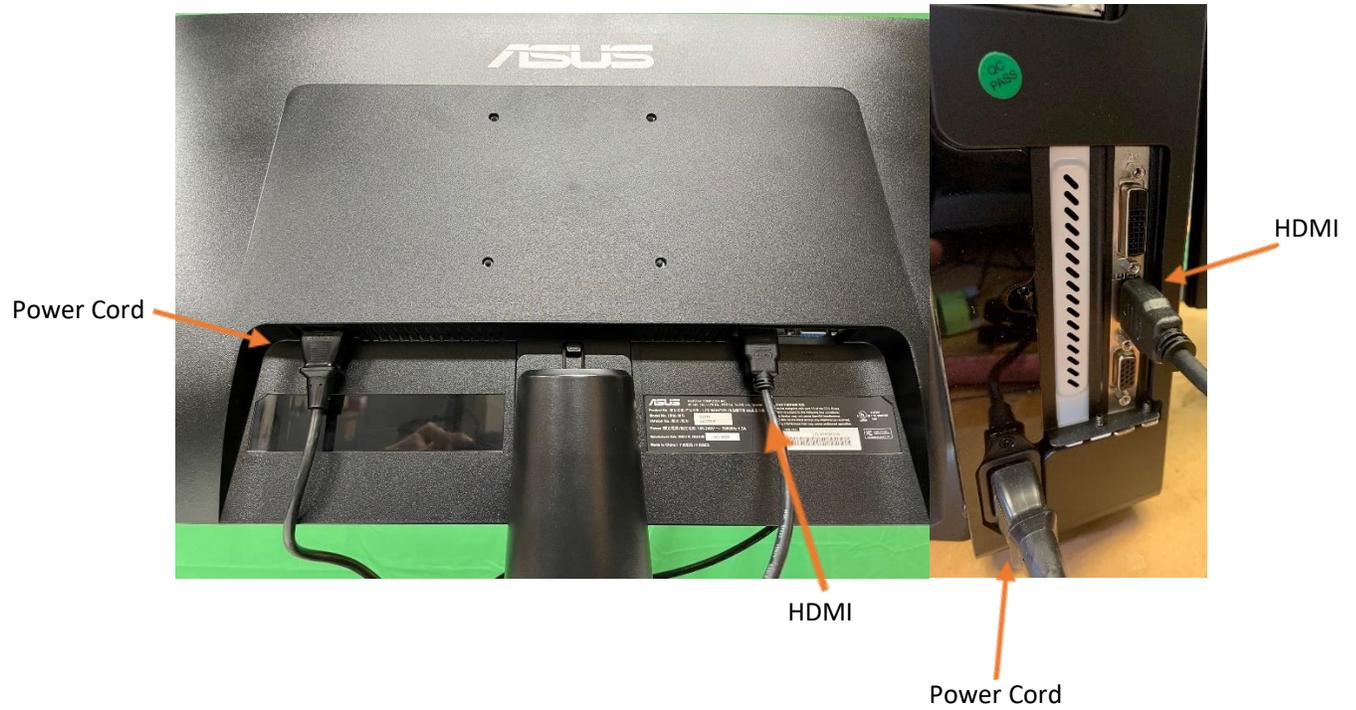
FIGURE 2-1 DUCTILITY TESTER DESK FRONT OVERVIEW



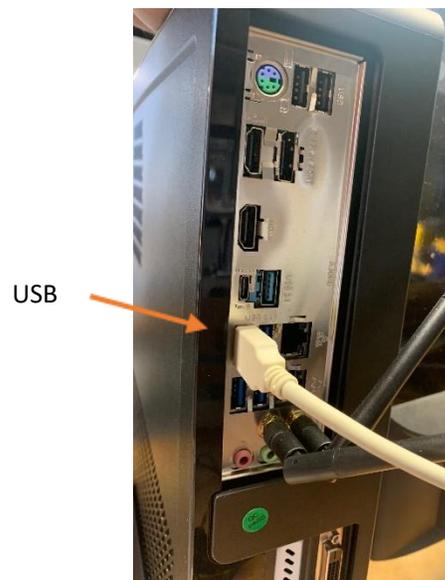
FIGURE 2-2 DUCTILITY TESTER CHASSIS FRONT OVERVIEW

Ductility Tester Tester Setup

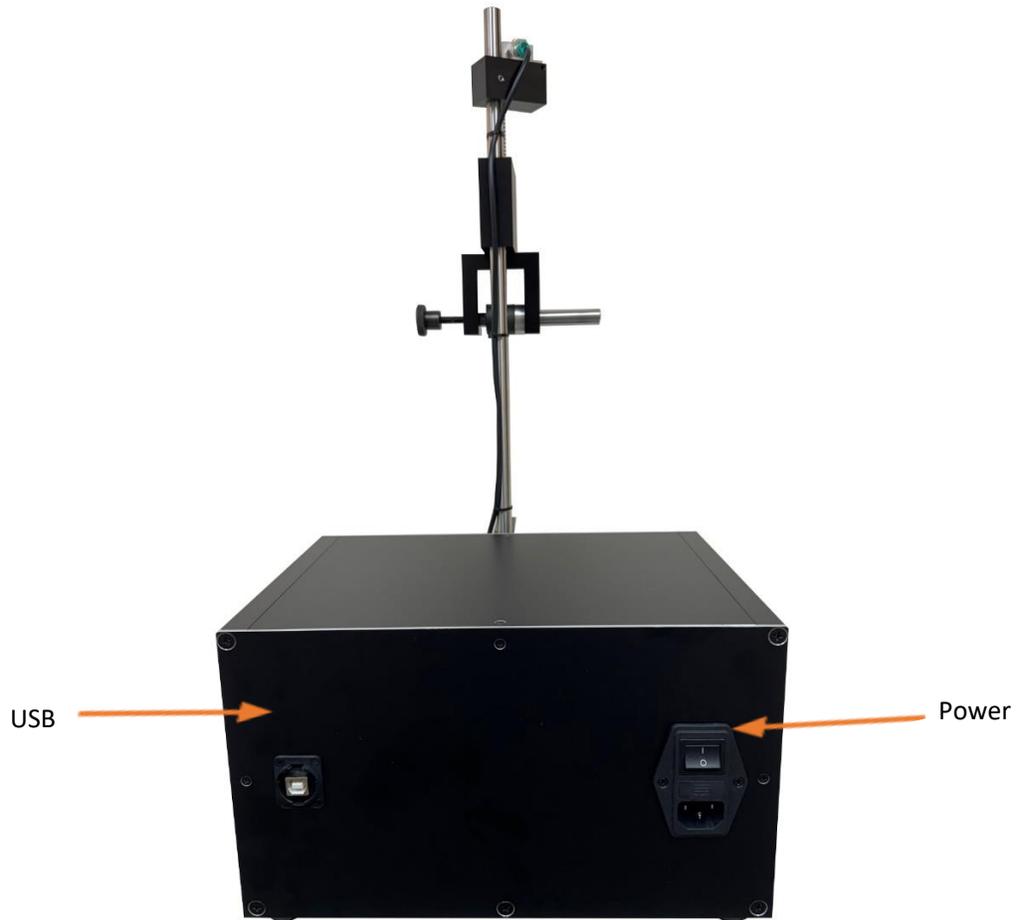
1. Set up the computer by connecting power and the HDMI cable to the monitor and then plugging the other end of the HDMI to the video card on the computer.



2. Plug the mouse and keyboard receiver into the computer and then plug one end of the USB B cable into the rear of the computer in an open USB slot.



3. Plug the other end of the USB-B cable into the Ductility Tester, and plug the Ductility Tester power cord into a wall outlet.



3 Operation

System Turn on

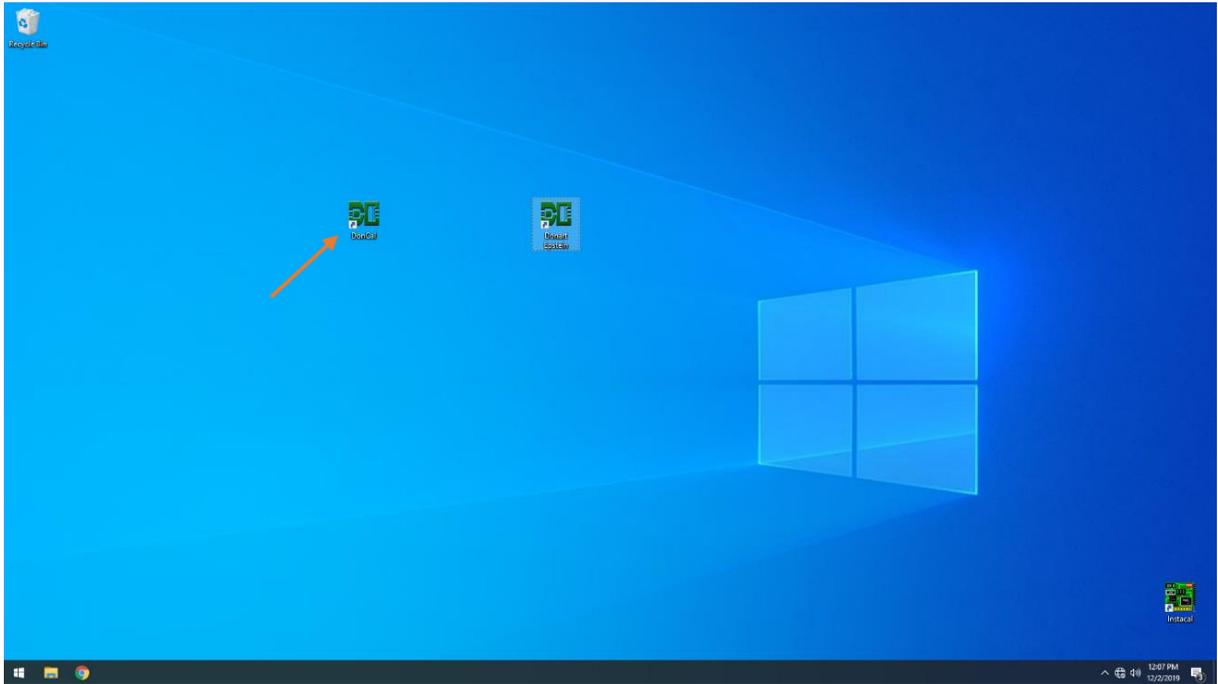
1. Hit the power button on computer. Its light will glow blue.



2. Flip the power switch on the back of the ductility tester

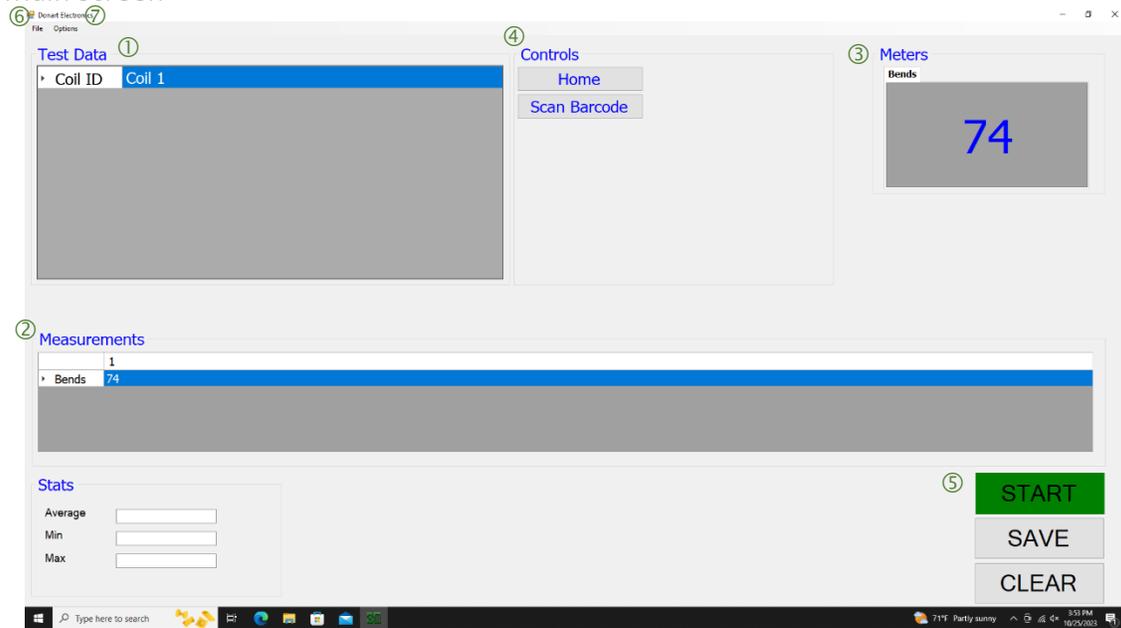


3. Double click on Donart Ductility Tester shortcut on the desktop.



Donart Ductility Tester Software

Main Screen



① Test Data

Allows the user to enter test data for each sample being tested

② Measurements

Section for showing a number of bends for a sample

③ Meters

Allows user to view bends during test

④ Controls Menu

Controls for testing such as scanning barcode to enter test data

⑤ Buttons

Used for starting test, saving and clearing of data

⑥ File Menu

For exiting and saving

⑦ Options Menu

For settings and calibration menus

Test Data Section

The test data section allows the user to enter informational data for the sample being tested. This test data is saved along with measurements from the current sample.

Test Data	
Coil ID	
Material Type	
Density	
Stress State	
Orientation	
Tester	
Thickness	

The test data can be customized by editing the testdata.ini file in the program file folder.

```

*Test Data.ini - Notepad
File Edit Format View Help
Coil ID
Material Type;CRNO,NO
Density
Stress State
Orientation
Tester

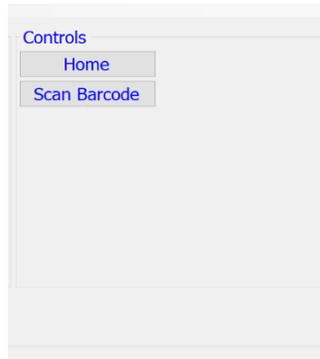
```

For text data entries, simply enter your row name line by line.

For drop down box entries. Enter your row name followed by a semicolon and then enter each drop-down selection separated by commas. You can see an example of this in the image above for material type.

Please note that if using the barcode scanning option, you will have to set up your test data info to match your barcode or else barcode scanning will not work.

Controls section



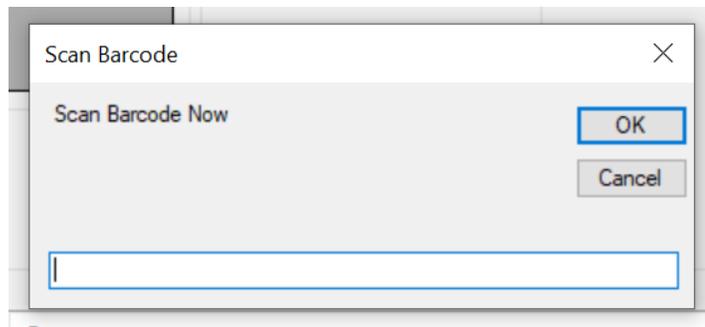
The controls section allows the user to home the tester and to scan barcodes for test data info.

Home

Clicking home will align the tester bend bar to the center position.

Scan Barcode

When scan barcode is clicked a pop-up window will appear.



A barcode can now be scanned and test data will automatically be entered from the barcode.

Measurements Section

Measurements $\mu\Omega\cdot\text{cm}$

	1	2	3
▶ ASTM			
IEC			

The measurements section allows the user to perform a number of ductility measurements for a sample. Data is automatically populated during the test in each cell.

Measurements $\mu\Omega\cdot\text{cm}$

	1	2	3
▶ ASTM			
IEC			

To populate a cell with a measurement, click the cell to highlight it and then click the start button. The tester will begin testing and once the test is finished, the highlighted cell will be populated and then the next cell to the right will be highlighted.

Measurements $\mu\Omega\cdot\text{cm}$

	1	2	3
▶ ASTM	50.698	50.702	
IEC	50.588	50.590	

Measurements $\mu\Omega\cdot\text{cm}$

	1	2	3
▶ ASTM	50.698	50.700	
IEC	50.588	50.589	

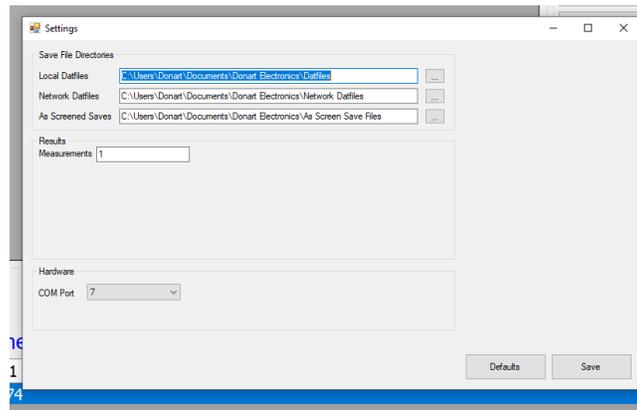
A measurement can be changed in the same manner. To retest a measurement, simply click the measurement you want to change and click start button. Once test is finished, the measurement will be updated and the next blank cell or last measurement will be highlighted.

Buttons Section



- Start/Abort
Starts test. Once clicked it will turn to an abort button to cancel test.
- Save
Saves Test data and measurements locally and over network
- Clear
Clears all entered test data, measurements and statistics

Settings Menu



The settings screen can be accessed by clicking options from the menu bar and then clicking settings.

Save File Directories

The save file directories section allows the user to change the following save file locations.

- Local Datfile Save File Location
Changes the save file location for local datfile strings
- Network Datfile Save File Location
Changes the save file location for network datfile strings
- As Screened Save File Location
Changes the save file location for as screen save files

To revert settings back to default. Click the defaults button then click save

Results

The results section allows the user to change the following results settings

- Measurements
Will change the number of measurements to be taken for each sample

Hardware

The hardware section allows the user to change settings for tester hardware

- COM Port
Changes the COM port for the stepper motor. The default value (0) will automatically select the correct COM port. Only change this setting if you are experiencing problems with detecting the stepper motor.

Loading a Sample

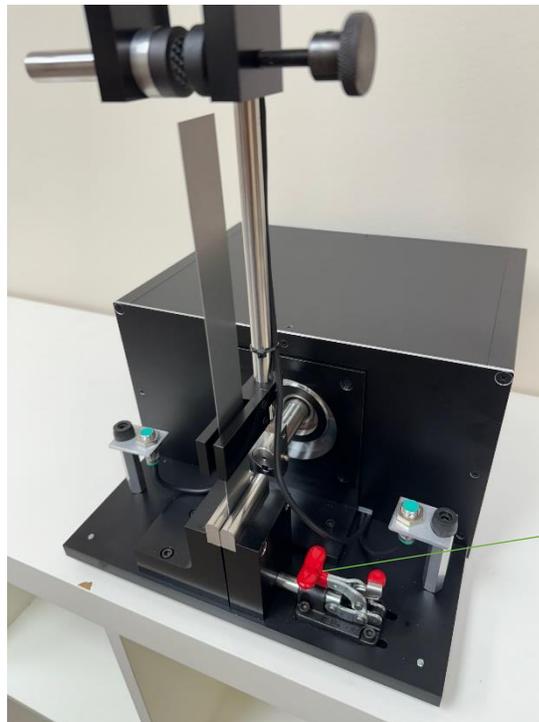
1. First home the tester by clicking the home button on the software screen
2. Insert the sample between the two clamps and jaw.

Clamps



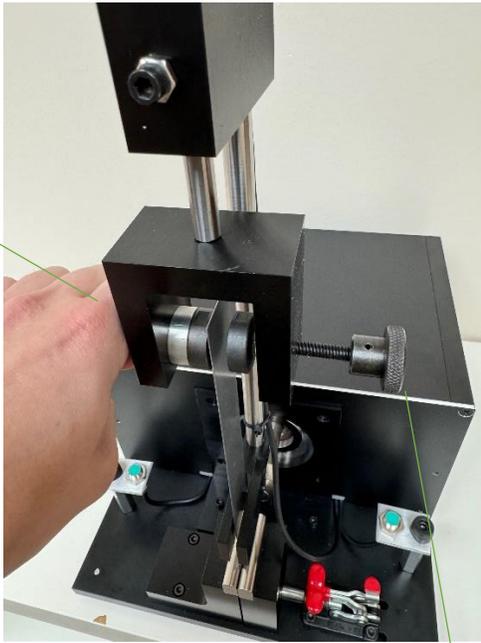
3. Push the red handle on the clamp forward to lock the sample into place.

Red Handle

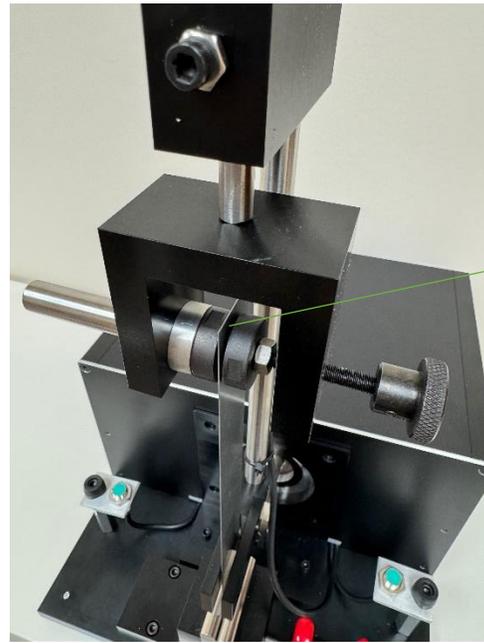


4. Pull the handle down on the sample gripper and tighten the handle screw until it grips the top of the sample.

Pull down on handle



Sample Gripped

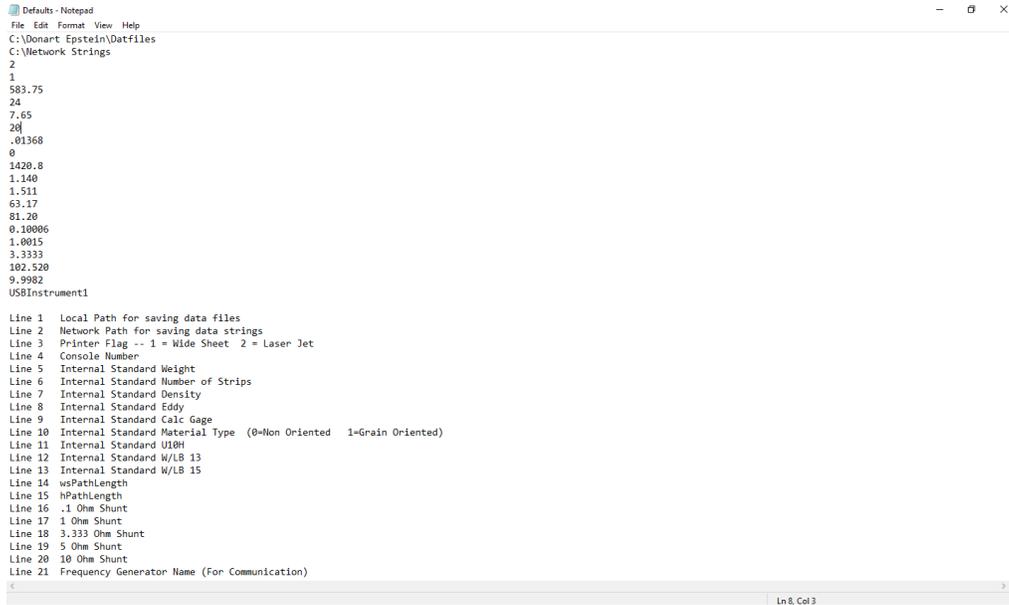


Screw handle

4 Settings

Defaults File

Located under C:\Donart Ductility Tester\ is the defaults.ini file. This file contains options such as default saving paths, internal standard test data, and adjustment for shunt values. Simply follow the line key at the bottom to modify each parameter by overwriting its corresponding line.



```
Defaults - Notepad
File Edit Format View Help
C:\Donart Epstein\Datfiles
C:\Network Strings
2
1
583.75
24
7.65
28
,01368
0
1420.8
1.140
1.511
63.17
81.20
0.10006
1.0015
3.3333
102.520
9.9902
USBInstrument1

Line 1 Local Path for saving data files
Line 2 Network Path for saving data strings
Line 3 Printer Flag -- 1 = Wide Sheet 2 = Laser Jet
Line 4 Console Number
Line 5 Internal Standard Weight
Line 6 Internal Standard Number of Strips
Line 7 Internal Standard Density
Line 8 Internal Standard Eddy
Line 9 Internal Standard Calc Gage
Line 10 Internal Standard Material Type (0=Non Oriented 1=Grain Oriented)
Line 11 Internal Standard U30H
Line 12 Internal Standard W/LB 13
Line 13 Internal Standard W/LB 15
Line 14 wsPathLength
Line 15 hPathLength
Line 16 .1 Ohm Shunt
Line 17 1 Ohm Shunt
Line 18 3.333 Ohm Shunt
Line 19 5 Ohm Shunt
Line 20 10 Ohm Shunt
Line 21 Frequency Generator Name (For Communication)
```

FIGURE 4-1 DEFAULTS.INI FILE

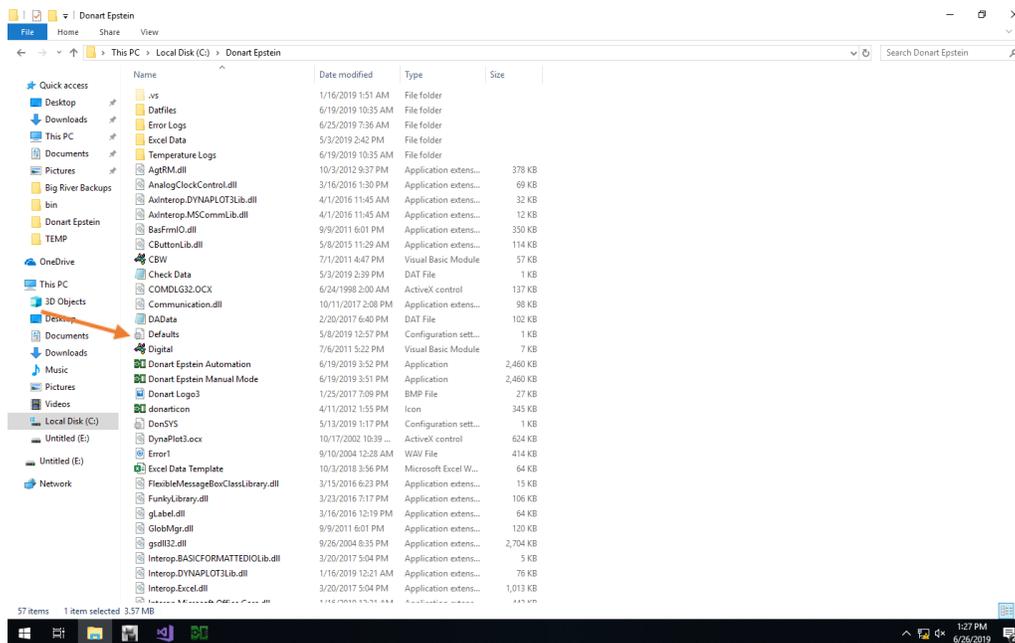


FIGURE 4-2 DEFAULTS.INI FILE LOCATION

Network String

As seen above, the second line of the defaults.ini file is for the network path for save strings. It is defaulted to C:\Network Strings; however, you can change this line to a mapped network drive for saving over the network. If you go to this default folder location you can look at an example of this string.

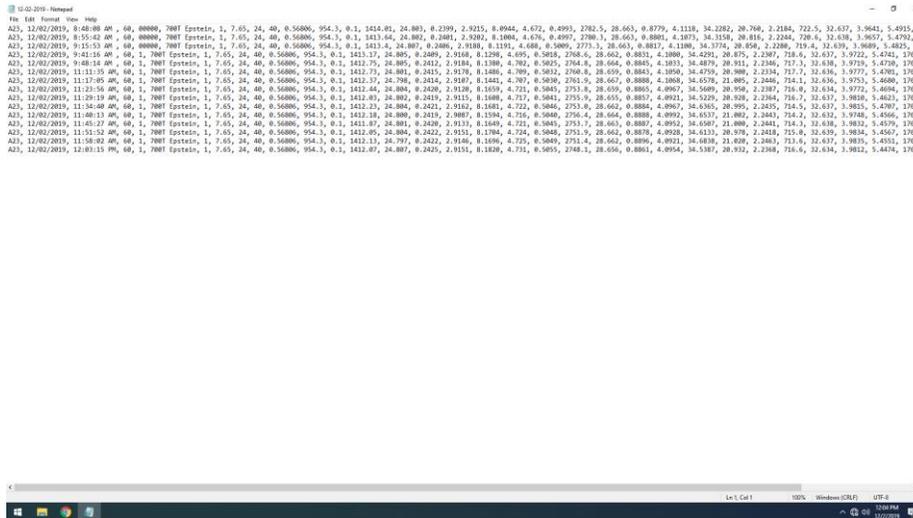


FIGURE 4-3 NETWORK STRING FILE

For network sending, all tests are saved as comma delimited text files, which can easily be saved to a mapped network drive for parsing.

5 Specifications

Measurable Materials	Epstein Strips
Test Data Reported	Bends
Measurement accuracy	Meets or exceeds ASTM Specification A720
Operating temperature	70°F±10°F