Humboldt Concrete Compression Machines and Controllers

Testing Equipment For Construction Materials

HUMBOLDT

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MADE IN USA

Automatic
Pump and Controller System
for concrete compression machines

HCM-5080 and HCM-5070 Automatic Pump and Controller Systems

ASTM C39, C78, C293, C469, C496, C1019, C109/C109M, BS EN 12390-32

Humboldt's Automatic Pump and Controller System is the most versatile, accurate and easy-to-use concrete compression machine controller available today.

It is designed to make fast work of testing cylinders, cubes and beams with any of Humboldt's concrete compression machines. It provides an easy-to-use automated testing workflow — just choose the test standard you wish to use from the menu, and you will be quickly guided through the test setup and testing process. It is the ideal automatic system whether you are purchasing a new concrete compression frame or upgrading an existing frame.

The system features a robust, reliable and cool-running 1hp, multi-piston pump, which works together with the controller for full operational control. The controller's high-resolution, 7-inch, color, touchscreen provides accurate, precision machine operation, setup and calibration. Setup and operation are simple with step-by-step procedures.

Calibration is also easy with the controller, allowing from 1 to 10 points to calibrate the machine in any increment chosen. It also provides an accurate motor-control knob, which allows calibrators to dial in precise calibration loads.

The system provides two channel inputs for load, which can be used to control two separate compression frames when using the HCM-HP4014 selector valve accessory. Two additional channels are provided for displacement, which provides an easy solution for determining Poisson's ratio and Young's modulus testing.

The controller also provides data acquisition capabilities of up to 1000 tests with 3000 points per test. This information can be exported via the front USB port and a flash drive.

Features:

- Provides two channel inputs for load, which allows for the control of two separate compression frames
- Provides two additional channel inputs for displacement, which allows performing extensometer and compressometer testing
- 7", high-resolution color touch-screen display with live readout, graphical and tabular display
- Easy test setup, just choose the standard you wish to test for and the controller will walk you through the complete setup
- Rapid approach, initial load and testing load are automated during test cycles
- Automatic control of test parameters
- Provides data acquisition of one reading per second
- Integral storage within the controller of up to 1000 tests and 3000 points per test

- Simple, Fast and accurate machine calibration with accurate, motor-control knob
- Displays in Imperial or metric numbers

Pre-programmed to run the following tests: ASTM C39, C78, C293, C469, C496, C1019, C109/C109M, BS EN 12390-3

HCM-5070 Console System

Humboldt's HCM-5070 is a console version of the HCM-5080 automatic controller system. The HCM-5070 Console System provides the same features as the HCM-5080, which includes our robust, reliable and cool-running 1hp, multi-piston pump, which works together with the controller for full operational control. The controller's high-resolution, 7-inch, color, touchscreen provides accurate, precision machine operation, setup and calibration. Machine setup and operation functions in the same fashion as the HCM-5080, with the ability to choose an ASTM specification and letting the controller guide you through the setup and testing function. The HCM-5070 can be used to control two separate compression frames when using the HCM-HP4014 selector valve accessory. This selector valve can be mounted directly to the console.

Controller System Specifications	
HCM-5080 HCM-5080.4F	120V 60Hz 220V 50/60HZ
HCM-5070 HCM-5070.4F	120V 60Hz 220V 50/60HZ
Display	7" (178mm) VGA (480 x 800) Resistive-touch screen
Processor	Dual 32-bit ARM
RAM	4GB
Analog to digital converter	24 bit
Data acquisition	4 Channels
Data Speed	1000Hz (1kH)
Logging speed	1 reading per second
Test storage	1000
Points per test	3000

Both Humboldt Controllers are: 120/220V 50/60z. However, the pump is either 120V 60Hz or 220V 50/60Hz.

Humboldt Automatic Controller HCM-5080
Humboldt Automatic Controller HCM-5080.4F
Ship wt. 180lbs. (82kg)

Humboldt Auto Console Controller HCM-5070
Humboldt Auto Console Controller HCM-5070.4F
Ship wt. 200lbs. (91kg)

HCM-5070 Console System for two Compression Machines

The HCM-5070 Console Controller System set up for two separate compression frames, one for cylinders and one for low strength beams. The System can easily switch control between the two frames via the HCM-HP4014 Selector Valve.

HCM-HP4014

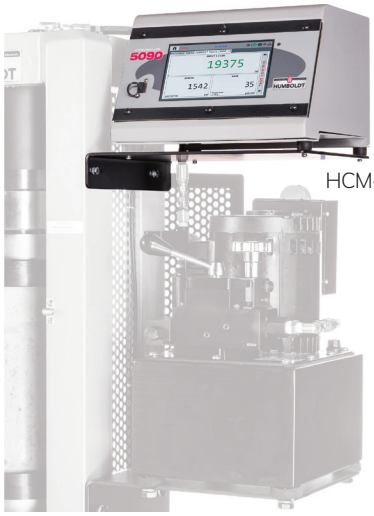
HCM-4177

HCM-4177.1


HCM-4177.4

HCM-005050

Accessories for HCM-5080 & HCM-5070	
HCM-HP4014	Frame Selector Valve
HCM-4177	Pressure Transducer, 10,000 psi with Cable and Plug
HCM-4177.1	Pressure Transducer, 10,000 psi
HCM-4177.4	Cable for Pressure Transducer 10,000 psi with Plug
HCM-005050	ISO VG 46 Hydraulic Oil, 1gal. (2gal. required)



HCM-5090

HCM-720

Automate your existing compression frame

Looking to automate your existing compression machine? Now you can easily upgrade it with one of Humboldt's automatic compression machine controllers — the HCM-5080 or the HCM-5070. Both controllers come with our robust, reliable and cool-running 1hp pump, which works together with the controller for full operational control of your compression machine. Both are pre-programmed to run the following tests: ASTM C39, ASTM C78, ASTM C293, ASTM C469, ASTM C496, ASTM C1019, ASTM C109/C109M, BS EN 12390-3.

The HCM-5080 upgrade kit comes with the necessary brackets and mounting hardware and both controllers are available with new compatible transducers, making these upgrade kits a quick and easy upgrade.

Don't want an automated controller? You can also upgrade your machine with the HCM-5090 digital indicator and use your existing pump or add one of our manual pumps as well. The HCM-5090 is also pre-programmed to run all the tests listed above.

Upgrade/Retrofit Accessories for HCM-5090	
Pressure Transducer, 10,000 psi with Cable and Plug	HCM-4177
Pressure Transducer, 10,000 psi	HCM-4177.1
Cable for Pressure Transducer with Plug	HCM-4177.4

HCM-5090 Digital Indicator

ASTM C39, C78, C293, C469, C496, C1019, C109/C109M; BS EN 12390-32

Humboldt's HCM-5090 digital indicator provides the same platform and many of the same features as the HCM-5080 and HCM-5070 except that it does not act as a controller, but works with a manually-operated pump.

Features:

- Provide two channel inputs for load, which allows for the control of two separate compression frames
- Provides two additional channel inputs for displacement, which allows performing extensometer and compressometer testing
- 7", high-resolution color touch-screen display with live readout, graphical and tabular display
- Easy test setup, just choose the standard you wish to test for and the controller will walk you through the complete setup
- Provides data acquisition of one reading per second
- Integral storage within the controller of up to 1000 tests and 3000 points per test
- Simple, Fast and accurate machine calibration
- Displays in Imperial or metric numbers
- Pre-programmed to run the following tests: ASTM C39, ASTM C78, ASTM C293, ASTM C469, ASTM C496, ASTM C1019, ASTM C109/C109M, BS EN 12390-3

The HCM-5090 is also available as a retrofit package.

Humboldt Digital Indicator **HCM-5090.3F**

Ship wt. 13 lbs. (5.9kg)

HCM-720 Digital Indicator

ASTM C39, E4, AASHTO T22

The i7 is an easy-to-use digital load indicator that simultaneously displays both live load and rate of load values during a test. It eliminates the need to toggle keys between functions, and, automatically displays peak load and average rate of load at the end of each test.

All test information is clearly displayed on the indicator's 5.3" (135 mm) wide 240 x 64 pixel back-lit V.G.A., liquid-crystal display with adjustable contrast settings. Test data is displayed in user selectable engineering units of lbs, kN, kg and N with rate of load displayed in force units per second.

The indicator will store up to 600 tests in memory, and transfer them directly into a word document via the optional USB Able Cable, or print them on an optional serial printer. Stored test data includes; test date and time, sample ID number, peak load and average rate of load. The average rate of load calculation is based on the average load rate applied to the sample during the second half of the test.

The i7 is also available as a retrofit package.

HCM-720 Digital Indicator **HCM-720**

Ship wt. 13 lbs. (5.9kg)

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Testing Equipment for Construction Materials

HUMBOLDT

HCM-5080 Automatic Pump and Controller System for Concrete Compression Frames

HCM-5080 and HCM-5070 Automatic Pump and Controller Systems

ASTM C39, ASTM C78, ASTM C293, ASTM C469, ASTM C496, ASTM C1019, ASTM C109/C109M, BS EN 12390-32

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HCM-5080 Automatic Pump & Controller

- Simple, Fast and accurate machine calibration with accurate, motor-control knob
- Displays in Imperial or metric numbers

Pre-programmed to run the following tests: ASTM C39, ASTM C78, ASTM C293, ASTM C469, ASTM C496, ASTM C1019, ASTM C109/C109M, BS EN 12390-3

HCM-5070 Console System

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HCM-5070 HCM-5070.4F	120V 60Hz 220V 50/60HZ
Display	7" (178mm) VGA (480 x 800) Resistive-touch screen
Processor	Dual 32-bit ARM
RAM	4GB
Analog to digital converter	24 bit
Data acquisition	4 Channels
Data Speed	1000Hz (1kH)
Logging speed	1 reading per second
Test storage	1000
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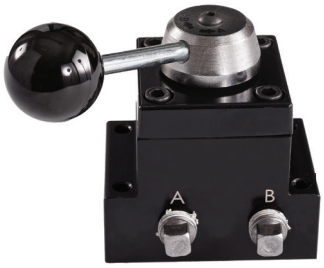
Ship wt. 180lbs. (82kg)

Humboldt Auto Console Controller HCM-5070
Humboldt Auto Console Controller HCM-5070.4F
Ship wt. 200lbs. (91kg)

HCM-5070 Console System for two Compression Machines

TheHCM-5070ConsoleControllerSystemsetupfortwoseparatecompressionframes,oneforcylindersandoneforlowstrengthbeams.TheSystemcaneasilyswitchcontrolbetweenthetwoframes via the HCM-HP4014 Selector Valve.



HCM-HP4014


HCM-4177.1


HCM-4177


HCM-4177.4

Accessories for HCM-5080 & HCM-5070	
HCM-HP4014	Frame Selector Valve
HCM-4177	Pressure Transducer, 10,000 psi with Cable and Plug
HCM-4177.1	Pressure Transducer, 10,000 psi
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HCM-005050	ISO VG 46 Hydraulic Oil, 1gal. (2gal. required)

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product manual 09.24

HCM-5080 & HCM-5080.4F

Automatic Digital Controller for Compression Machines

Testing Equipment For Construction Materials

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CONTENTS

Unpacking

Initial inspection should include checking for physical damage during shipping and obvious external damage to the product.

Package contents are defined by your packing list. Each Loader is configured according to customer specifications. In your inspection, make certain that the contents of your shipment match the documentation provided by your packing list.

Installation and Equipment Setup

Electrical Connections

The HCM-5080 is equipped with an internal digital switching power supply, which allows it to be used with most power configurations throughout the world. The unit is supplied with an IEC electrical cord with a standard 110V plug.

The HCM-5080 arrives ready for operation. Attach the supplied IEC electrical cord to the machine and plug into a standard wall receptacle for use in the United States. For locations other than the U.S., replace the supplied electrical cord with an IEC cord that has the correct plug for your application. The supplied cord can also be used by cutting the standard plug from the cord and attaching the correct plug.

Power Switch

The Power Switch is located on the upper right hand corner of the back of the machine, above the electrical cord inlet. The Fuse Compartment is located between the electrical cord inlet and the Power Switch. The HCM-5080 uses a 10 amp fuse. To begin operation, attach the supplied electrical cord, plug it in and press the Power Switch.

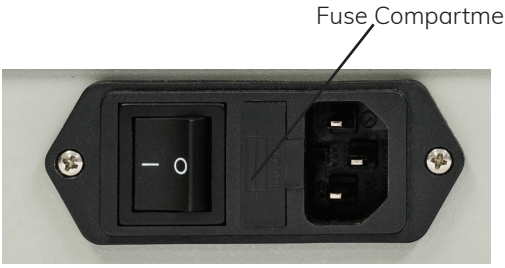


Fig. 1 Power Switch

Instrumentation Connections and Setup

HCM-5080 Rear Instrumentation Panel

Above is a photo of the rear panel of the HCM-5080.

Network (1)
Ethernet input for connecting machine to a local area network (LAN) and/or the internet. **This feature is for future use and does not currently function.**

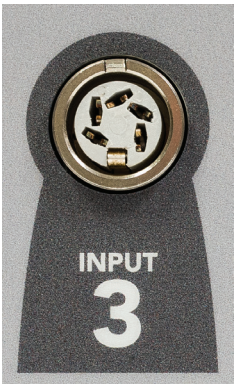
USB Power (2)
The USB Power port is used for powering a wireless access appliance for those who want to use a wireless LAN setup. **This feature is for future use and does not currently function.**

Instrument Inputs (3)
The HCM-5080 rear panel features four (4) inputs for connecting instrumentation to the machine. Each input represents a separate channel. Inputs 1 and 4 have been setup at the factory to read Load. Inputs 2 and 3 have been setup at the factory to read Displacement. Use these Inputs accordingly.

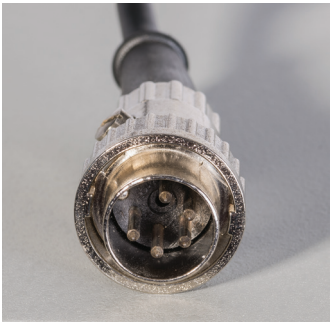
If you have purchased this controller with your Compression Machine or have ordered instrumentation from Humboldt with your HCM-5080, this instrumentation has been assigned to a specific Input on the Controller. Instrumentation will have a numbered tag attached to it and should be plugged into the corresponding input on the Controller.

Once your compression machine is setup in its final position, you should have all instrumentation validated/calibrated by a certified calibrator. Per ASTM, all concrete testing machines are required to be calibrated every time they are moved. See calibration instructions in the Equipment Setup section of this manual.

Below are photos of an instrumentation input and the instrumentation plug. Install the plugs into the inputs by lining up the guide at the bottom of the plug with the slot at the bottom of the input.



Instrumentation Input



Instrumentation Plug

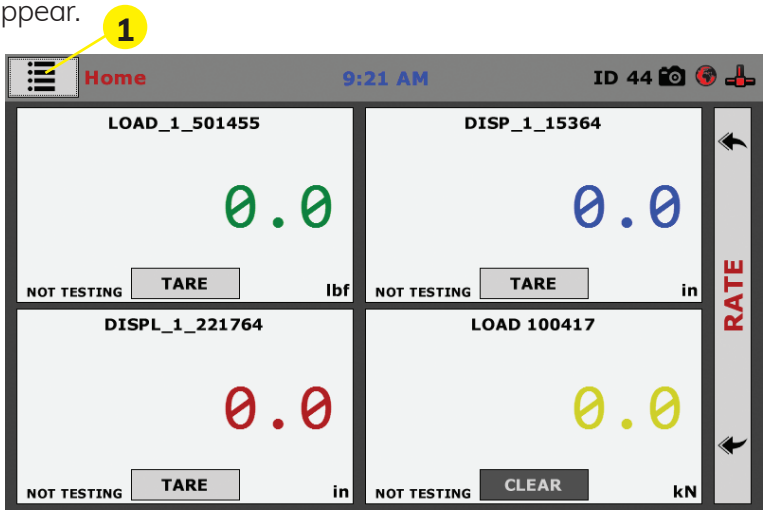
Once you have installed the instrumentation into the correct inputs, your rear panel should look like this if you are using all four inputs.

If you purchased multiple compression machines and/or compressometers/extensometers with your Compression machine/Controller, their input plugs will be marked to cor-

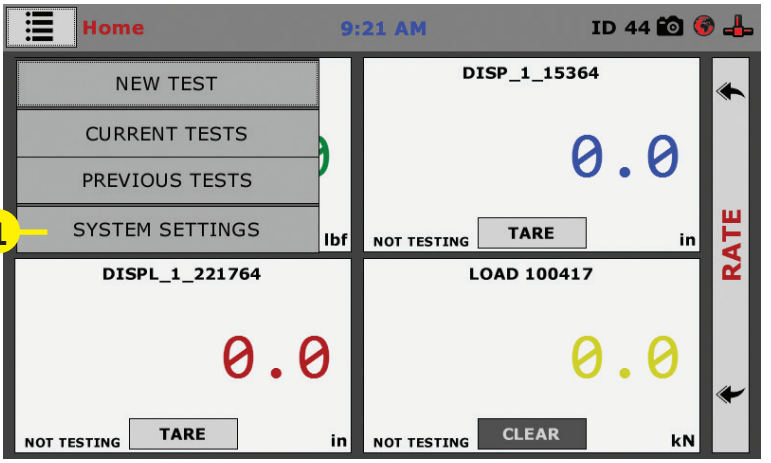
respond to an input on the back of the controller. Refer to the Equipment Setup section of this manual, page 25 for additional information and instructions. Third-party instrumentation, which is compatible, can also be used with the HCM-5080. If you plan to use third-party compression machines or instrumentation, please refer to the Equipment Setup section of this manual, page 29, for instructions.

Initial Set Up

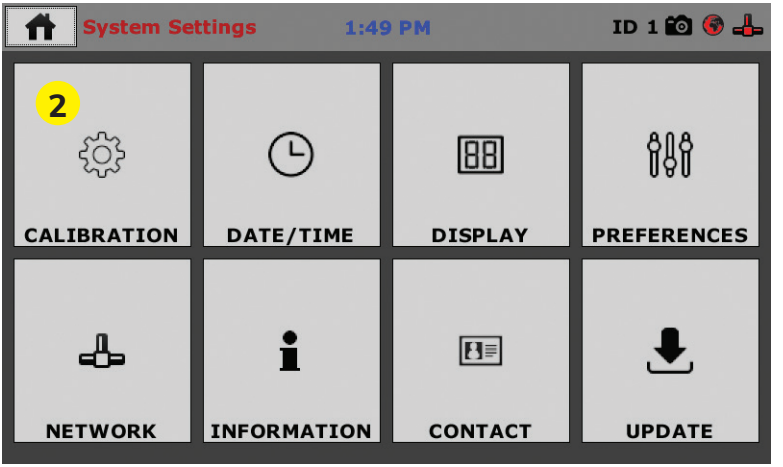
When your HCM-5080 is first turned on, the screen below will appear.



From this screen, to confirm your machine instrumentation has been calibrated or to begin the calibration process, navigate to the Calibration section by clicking the Menu icon in the top left corner of the screen (1). When you click on this button, you will see a drop-down menu appear, see below.

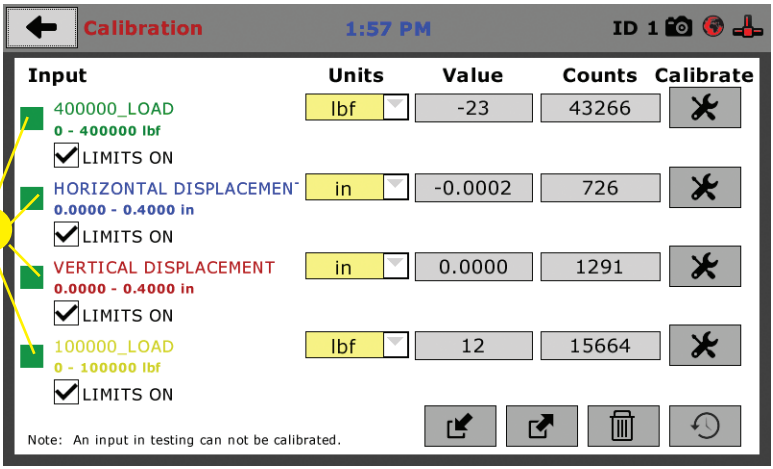


Navigate to the bottom of this drop-down menu and click on System Settings **(1)**. You will see the following screen.



Initial Set Up — Calibration

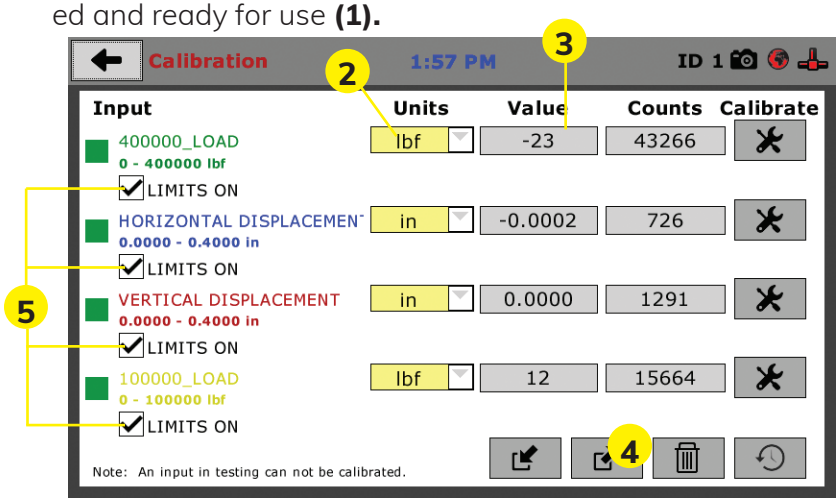
Click on the Calibration tab in the top left corner **(2)**. You will see the following screen.



Calibration Input Screen

The Calibration Input Screen (above) is used to monitor and calibrate instrumentation and assign them to the specific channels of the HCM-5080. The Calibration Input Screen provides a summary of the calibration status of each channel. At this time, verify the calibration information.

A green box at the left of a channel indicates that the channel has instrumentation assigned to it and that it is calibrated and ready for use **(1).**



Each channel has a “Limits On” check box. Use the Limits On to keep the machine from exceeding the sensor limits of the instrumentation. By selecting this option, before the test can exceed the limits of the sensors, all tests will stop running and the motor will stop to avoid damaging connected instrumentation.

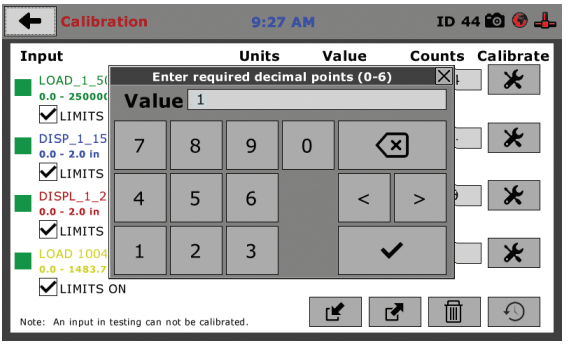
Note: An input cannot be calibrated during testing.

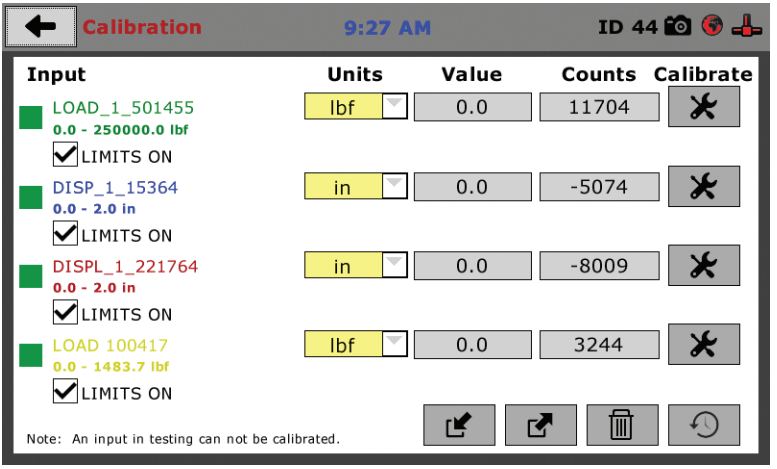
Units (2)

In this field, a calibrated instrument will display the units that were chosen for use at the time of calibration. This field can also be used to automatically toggle conversion of units between imperial and metric units if the need arises.

Value (3)

This field displays the current calibration value. This value can be set with up to 4 decimal point accuracy . If the instrument is not calibrated, the unit will read “N/A.” To change the numbers of decimals shown, click on the field and the following window will appear. Fill in the number of decimal points desired **(1)**.





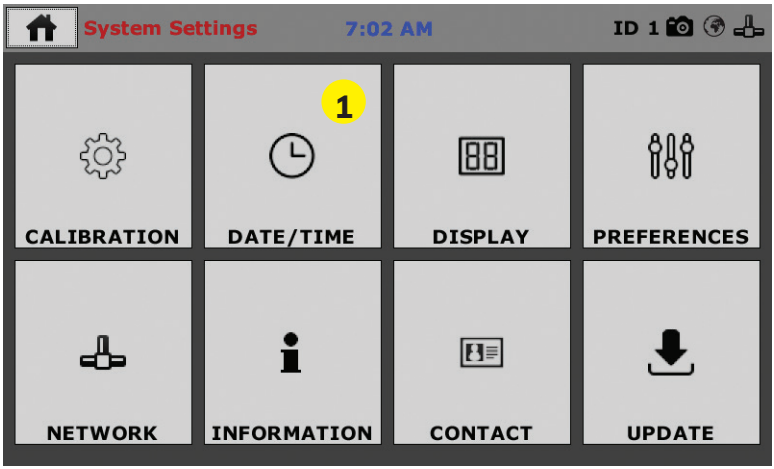
The screen above shows a typical calibration setup. In this example, the HCM-5080 has been set up with two channels for Load and two channels for Displacement.

Channels 1 and 4 are set for Load readings and Channels 2 and 3 are set for Displacement readings.

Export Calibration via USB (4)
Press this button to select calibrations to export via USB. It is a good practice to export all your calibrations to a thumb drive. In case of a problem this practice allows you to recover your calibration data quickly.

Initial Set Up — Date and Time

To set up Date and Time settings, return to the System Settings screen and click on the Date/Time Panel. **(1)**



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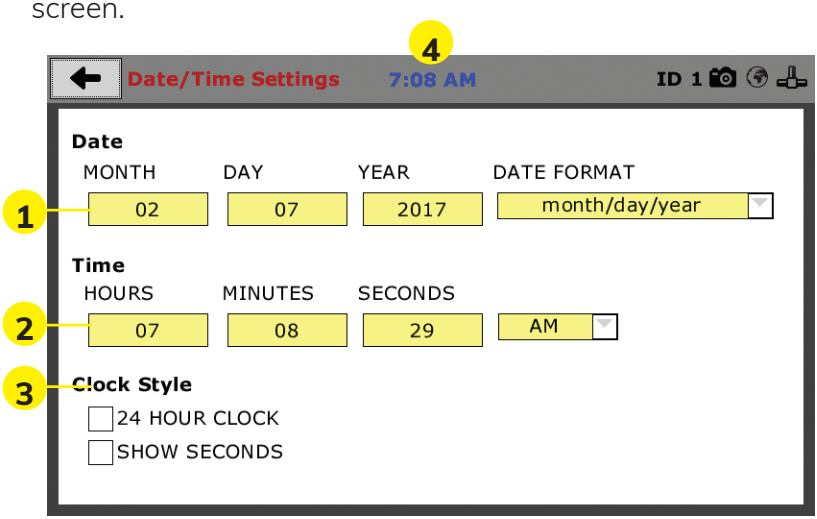


Date (1)
Set the month, day, year, and date display format.

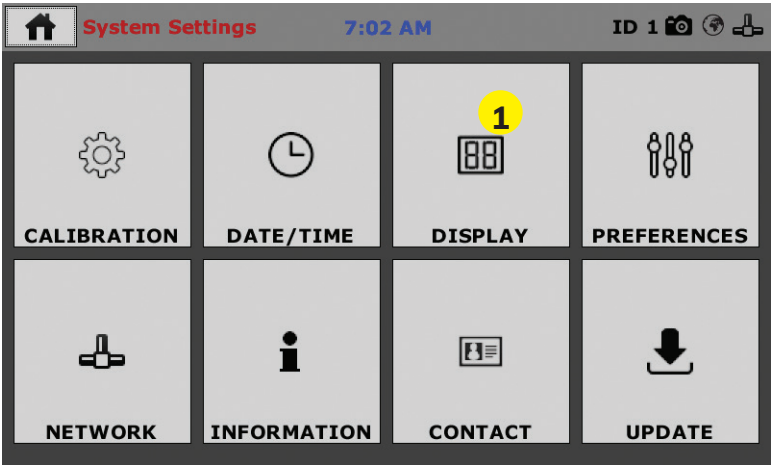
Time (2)
Set the hours, minutes, seconds, and am/pm.

Clock Style (3)
Select a clock view, either a 24-hour or 12-hour clock, as well as the option to show seconds or not.

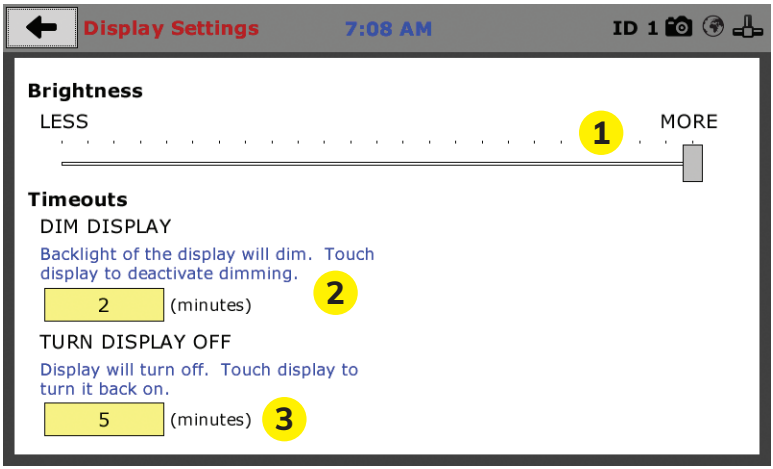
Clock (4)
The current time is displayed and is located on every controller screen. Clicking on the time from any screen, you will be taken to the Date/Time Settings Screen.

Initial Set Up — Display

To set up Display settings, return to the System Settings screen and click on the Display Panel. **(1)**



Click on the Display tab **(1)**. You will see the following screen.



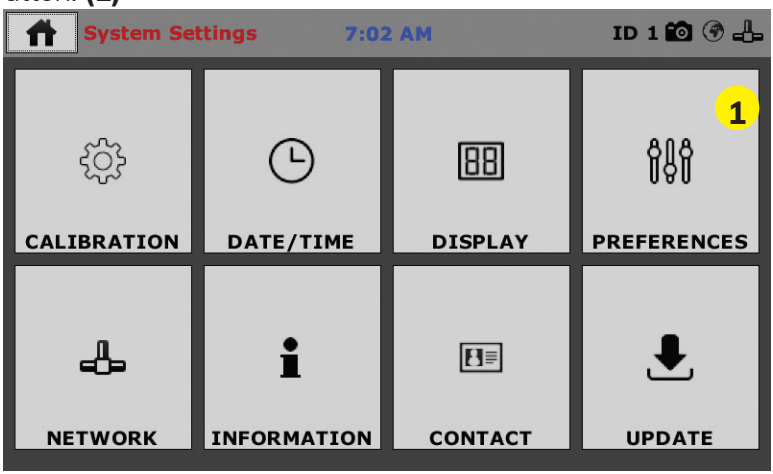
Brightness (1)
Slide the gray bar to the left or right to adjust brightness.

Dim Display (2)
The backlit display will automatically dim to save power. Click the yellow box to change the number of minutes before the display goes dim. After the time has elapsed, touch the display to deactivate dimming.

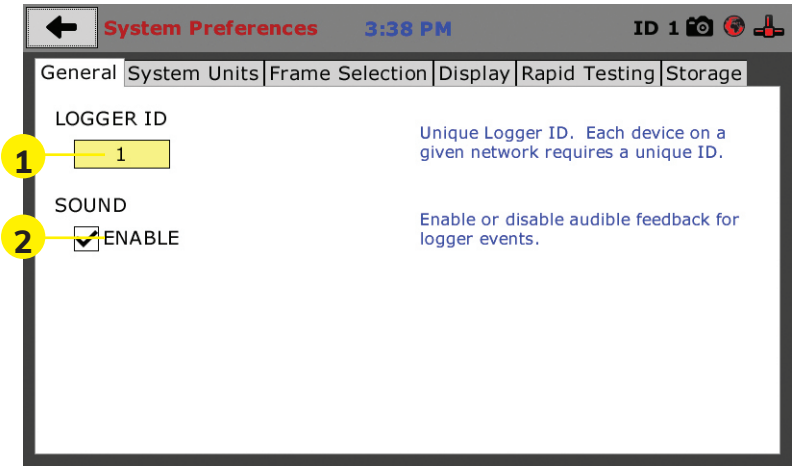
Turn Display Off (3)
The display will automatically turn off to save power. Click the yellow box to change the number of minutes before the display powers off.

Initial Set Up — Preferences

This screen is accessed by clicking on the "Preferences" button. **(1)**



Click on the Preferences tab **(1)**. You will see the following screen.



Preferences – General Tab

The Preferences panel is comprised of four (4) tabs and defaults to the General tab, see above.

Logger ID (1)

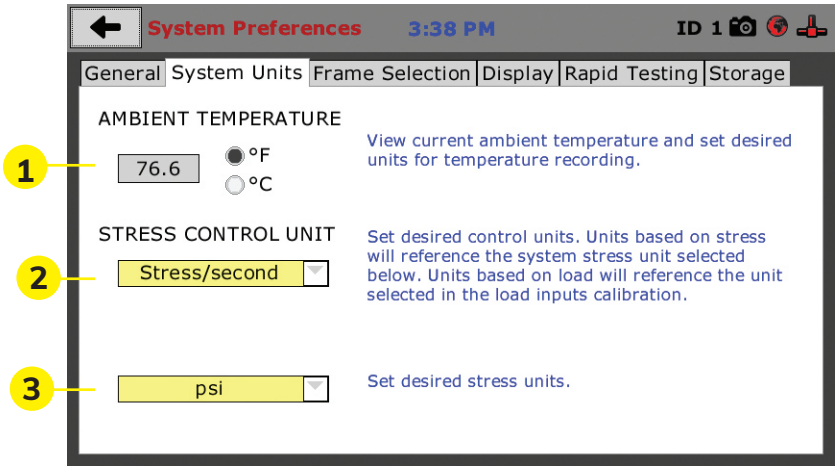
Each machine that is connected to your network requires a unique Logger ID. These numbers can be assigned any number between 1-245. In most cases, if you are setting up a new machine it has been given the Logger ID 1. This would show in the Logger ID field. (1). If this number conflicts with another machine's Logger ID, one of the machines will have to be changed to another Logger ID.

Sound (2)

Checking this box enables or disables audio feedback for logger events.

Preferences – System Units Tab

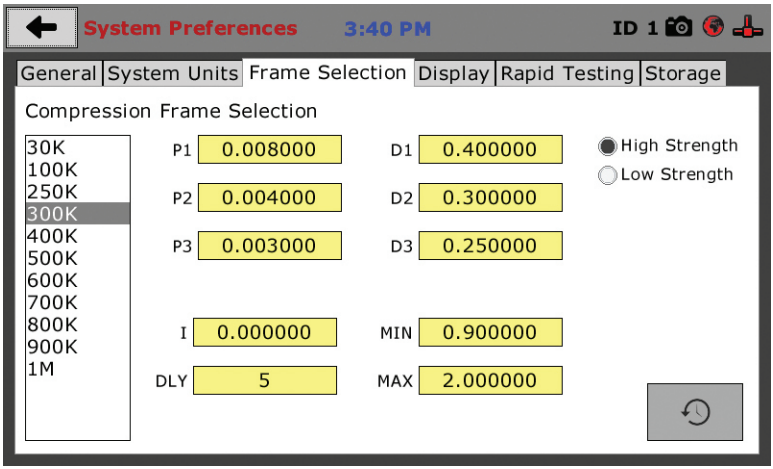
This screen is accessed by clicking on the "System Units" Tab under System Preferences.



Ambient Temperature (1)
This field displays the current ambient temperature and allows you to select desired units (Fahrenheit or Celsius) for temperature recording.

Stress Control Unit (2)
Choose the desired stress control unit you wish to use from the popup window **(2).** Then choose the desired units from the second popup window **(3)**.

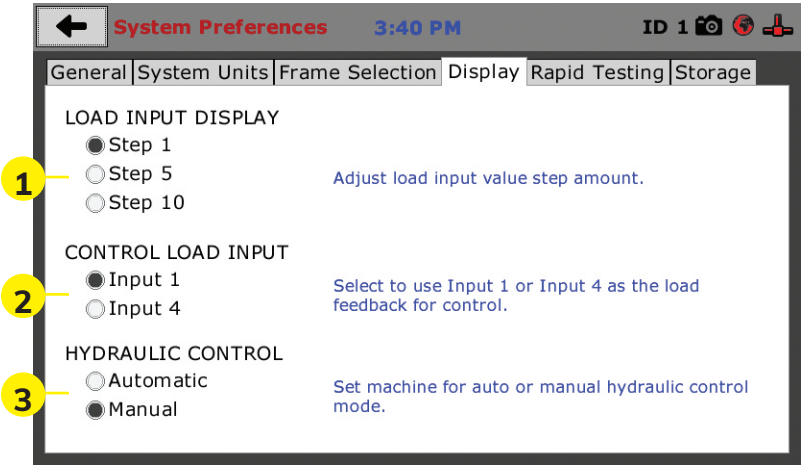
Preferences – Frame Selection



This screen is for use by calibrators or service personnel only, DO NOT CHANGE SETTINGS WITHOUT CONSULTING HUMBOLDT PERSONNEL FIRST.

The information displayed here are the factory settings for your compression machine and should not be changed. All necessary information will be set at the factory. Ignore the High Strength and Low Strength radio buttons as these settings are for diagnositics and controlled during a test by your choice of the appropriate ASTM standard you wish to use.

Preferences – Display Tab



Load Input Display

Use this section to choose the desired load input value increment you wish to see on the screen. An example of this would be if you want your visual readings to register by 10 , i.e. 200, 210, 220... choose Step 10.

Control Load Input

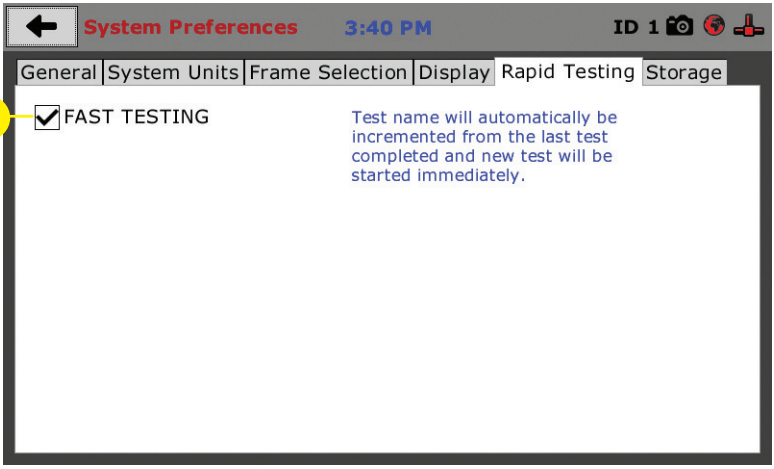
Use this section to choose which compression machine input you wish to use for your test. If you only have one compression machine, you will usually use Input 1. If you have two compression machines you would need to choose which machine you wanted to use for the current test.

Hydraulic Control

Use this section to choose whether you are going to use automatic or manual pump operation for your testing. In all but specialized testing, you will probably be choosing automatic. However, you will use the manual setting for calibration operations.

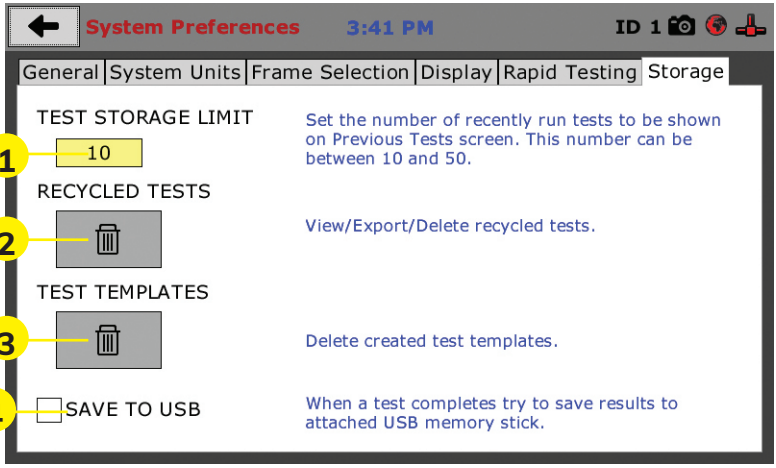
Preferences – Rapid Testing

This screen is accessed by clicking on the Rapid Testing Tab under System Preferences. Clicking the check box next to Fast Testing **(1)** will allow the controller to automatically create a new test name based on the last test and start the new test immediately.



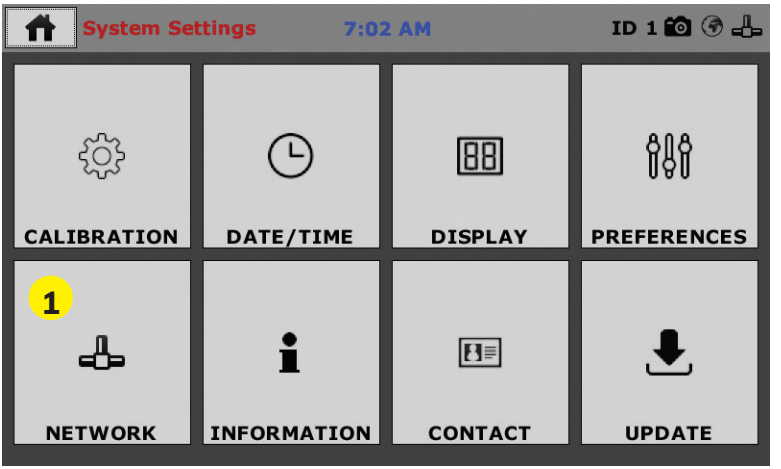
Preferences – Storage Tab

This screen is accessed by clicking on the Storage Tab under System Preferences.

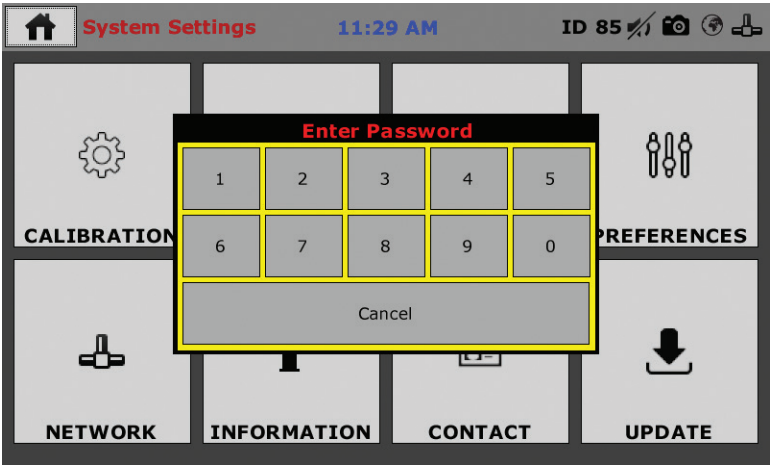


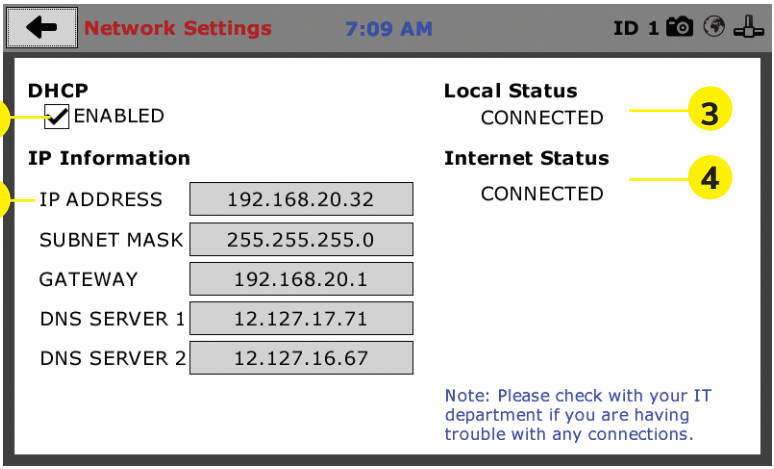
Initial Set Up — Network

To set up Network settings, return to the System Settings screen and click on the Network panel. **(1)**



A password is required to access the Network Settings. That password is: **27604**.





Network Settings Screen
The screen above is the Network Settings screen, it provides information on your IP information and network status.

DHCP (1)
Check this box to enable/disable the Dynamic Host Configuration Protocol (DHCP). If enabled, your machine will pick up IP information from your router. If disabled, you will need to manually enter the network information for a static IP, please consult your network administrator for this.

IP Information (2)
This information will be filled in automatically if the DHCP is checked, otherwise you will have to manually supply this information. The IP address must be unique for each machine.

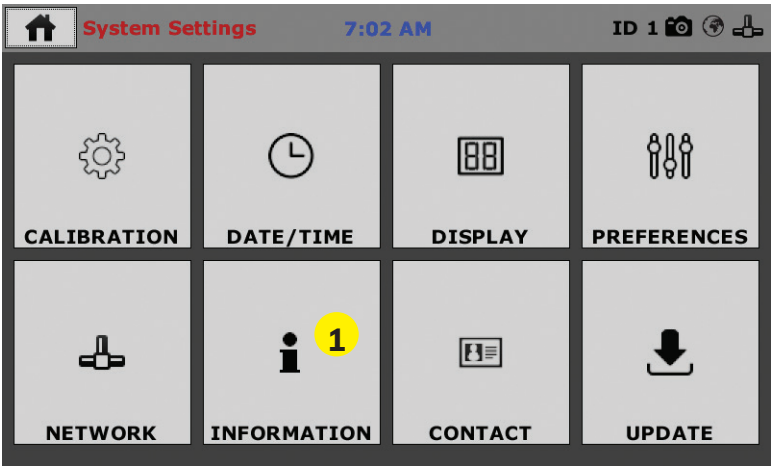
Local Status (3)
This indicates the status of the local network connection, Connected or Disconnected.

Internet Status (4)
This indicates the status of your Internet connection, Connected or Disconnected.

Note: If you are experiencing issues with any connections, please contact your IT department for assistance.

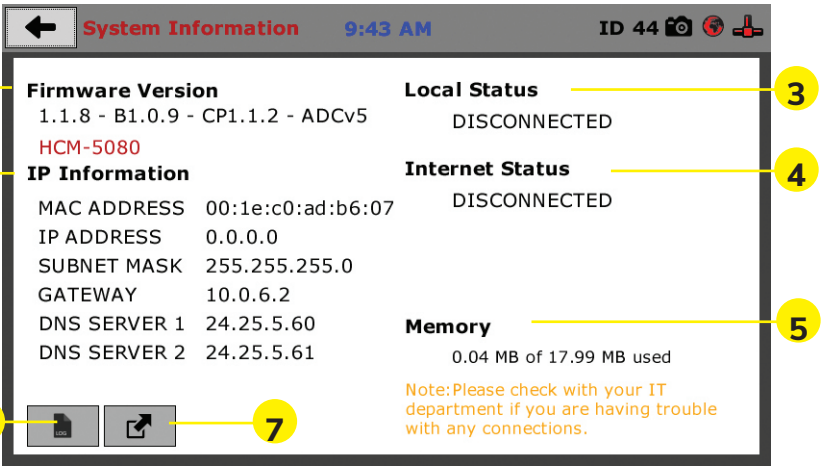
Initial Set Up — Information

Clicking on this panel provides a view of the current status of the machine. **(1)**



System Information

Below is a view of the System Information screen. It provides a current status of the machine.



Firmware Version (1)

The current version of the machine firmware is shown here. If you contact product support, you will need to supply this information.

IP Information (2)

This information will be filled in automatically if DHCP is checked, otherwise you will have to manually supply this information. The IP address must be unique for each machine.

Local Status (3)

This indicates the status of the local network connection, Connected or Disconnected.

Internet Status (4)
This indicates the status of your Internet connection, Connected or Disconnected.

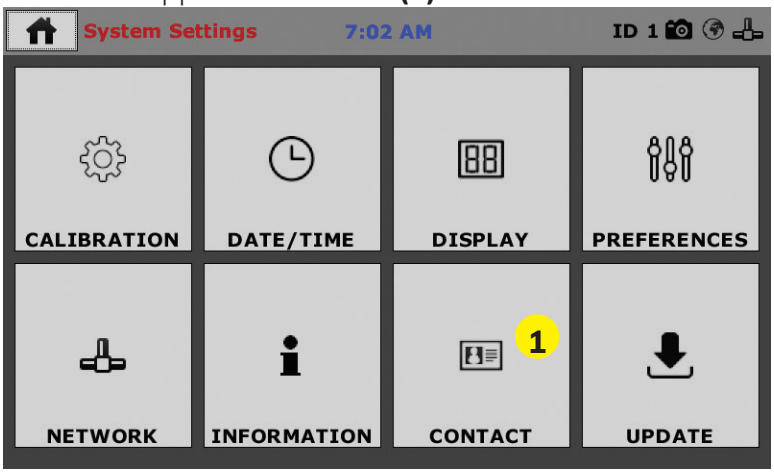
Memory (5)
This indicates the current status of how much available memory is being used by the machine

Factory Screen (6)
This is for Humboldt use only.

Export Log File (7)
This button exports a log file from the machine to a USB thumb drive. Be sure to insert a thumb drive before exporting the file or you will receive an error. This file can be helpful in trouble shooting by Humboldt Support.

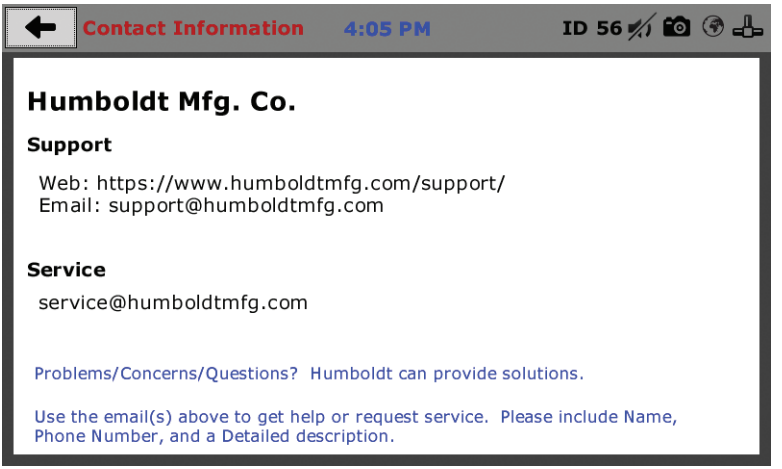
Initial Set Up —Contact

Clicking on this panel provides contact information for Humboldt Support and Service**(1)**



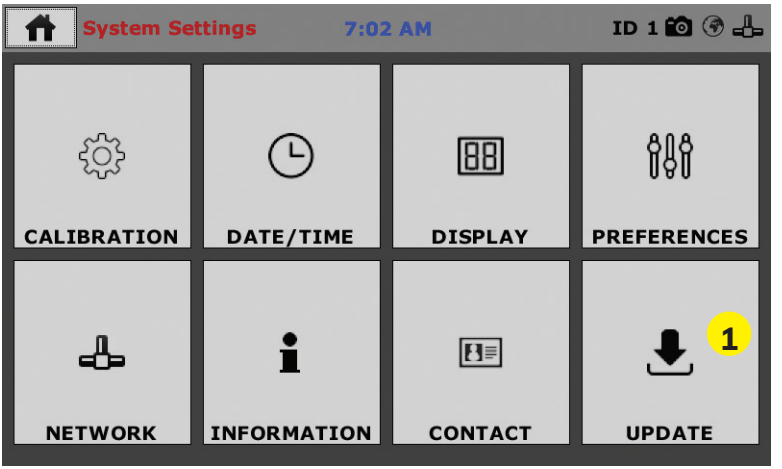
Contact Information
Below is a view of the Contact Information screen showing contact information for Humboldt Support and Service.

For quickest response go to this link on our website: https://www.humboldtmfg.com/support and fill in the support form. This will provide us with the necessary information to assist you and you will be added to the next position in the support cue. You can also email Humboldt Support at support@humboldtmfg.com or Humboldt Service at service@humboldtmfg.com. Please include contact information and a detailed description of your reason for contact.



Initial Set Up — Update

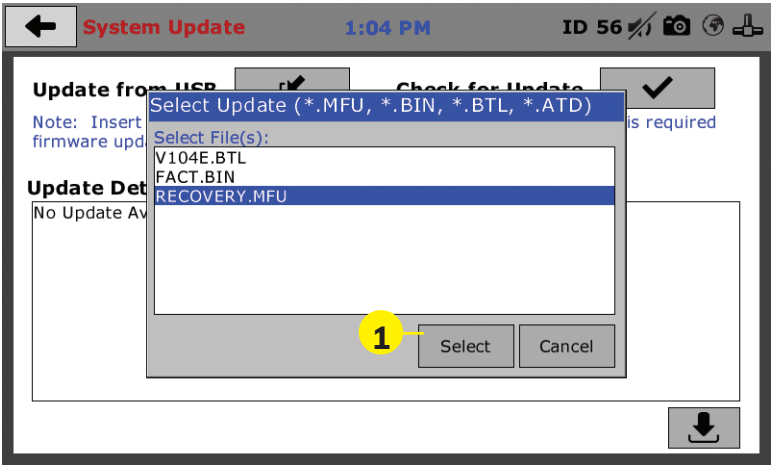
Clicking on this panel provides information on checking for Updates, performing updates and an update history for the machine. **(1)**



Update from USB (1)
Software updates for your machine can be downloaded from the Humboldt website Support Area using a computer. To access the Software Update area, go to: https://www.humboldtmfg.com/support/software.php.

Once on this page, click on the Elite Series Firmware tab.

1) You will see a list of Humboldt Elite Series machines.
2) Click on the HCM-5080 Current Version link and the firmware update will begin to download to your computer.
3) Once the download is complete, load the file onto a USB thumb drive and insert the thumb drive into the USB port on the front of the HCM-5080.
4) With the USB thumb drive inserted into the USB port, click on Update from USB **(1)**.
5) A window will open and you will see a list of Updates. Select a file to use for your update and click the Select button.



6) The update process will begin. This may take several minutes. Your HCM-5080 may reboot several times during the update, do not turn off or reset machine during this process.

Equipment Setup

Installation and Equipment Setup

Electrical Connections

The HCM-5080 is equipped with an internal digital switching power supply, which allows it to be used with most power configurations throughout the world. The unit is supplied with an IEC electrical cord with a standard 110V plug.

The HCM-5080 arrives ready for operation. Attach the supplied IEC electrical cord to the machine and plug into a standard wall receptacle for use in the United States. For locations other than the U.S., replace the supplied electrical cord with an IEC cord that has the correct plug for your application. The supplied cord can also be used by cutting the standard plug from the cord and attaching the correct plug.

Power Switch

The Power Switch is located on the lower left-hand corner of the back of the machine, next to the electrical cord inlet. The Fuse Compartment is located between the electrical cord inlet and the Power Switch. The HCM-5080 uses a 10 amp fuse. To begin operation, attach the supplied electrical cord, plug it in and press the Power Switch.

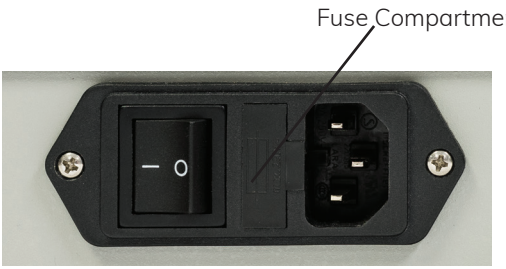


Fig. 1 Power Switch

Instrumentation Connections and Setup

HCM-5080 Rear Instrumentation Panel

Above is a photo of the rear panel of the HCM-5080.

Network (1)
Ethernet input for connecting machine to a local area network (LAN) and/or the internet. **This feature is for future use and does not currently function.**

USB Power (2)
The USB Power port is used for powering a wireless access appliance for those who want to use a wireless LAN setup. **This feature is for future use and does not currently function.**

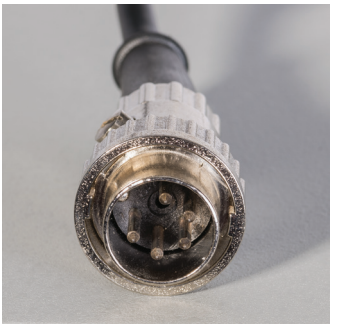
Instrument Inputs (3)
The HCM-5080 rear panel features four (4) inputs for connecting instrumentation to the machine. Each input represents a separate channel. Inputs 1 and 4 have been setup at the factory to read Load. Inputs 3 and 4 have been setup at the factory to read Displacement. Use these Inputs accordingly.

If you have purchased this controller with your Compression Machine or have ordered instrumentation from Humboldt with your HCM-5080, this instrumentation has been assigned to a specific Input on the Controller. Instrumentation will have a numbered tag attached to it and should be plugged into the corresponding input on the Controller.

Once your compression machine is setup in its final position, you should have all instrumentation validated/calibrated by a certified calibrator. See calibration instructions in the Equipment Setup section of this manual.

Below are photos of an instrumentation input and the instrumentation plug. Install the plugs into the inputs by lining up the guide at the bottom of the plug with the slot at the bottom of the input.

Instrumentation Input



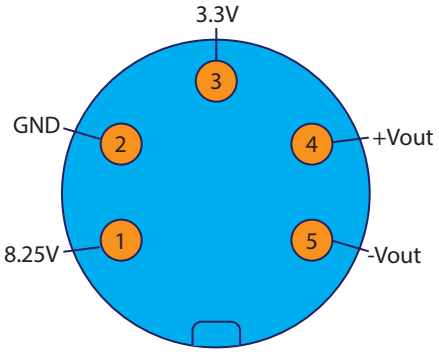
Instrumentation Plug

Once you have installed the instrumentation into the correct inputs, your rear panel should look like this if you are using all four inputs.

If you purchased multiple compression machines and/or compressometers/extensometers with your Compression machine/Controller, their input plugs will be marked to correspond to the correct type of input on the back of the controller. Remember: Inputs 1 and 4 are configured to read Load and Inputs 2 and 3 are configured to read Displacement.

Third-Party Instrumentation

Third-party load cells/transducers and compression machines, which are compatible, can also be used with the HCM-5080. Compatible units must work with an excitation voltage of 8.25 volts and produce an output of 0-5 volts. Prior to use, all third-party instrumentation must be configured and calibrated. If you are using third-party cables for load cells/transducers connections, make sure they are wired to be compatible with the HCM-5080, see illustration below. Plugs to connect third-party instrumentation to the Humboldt HCM-5080 are available; order part HS-000474.



Calibration of Instrumentation

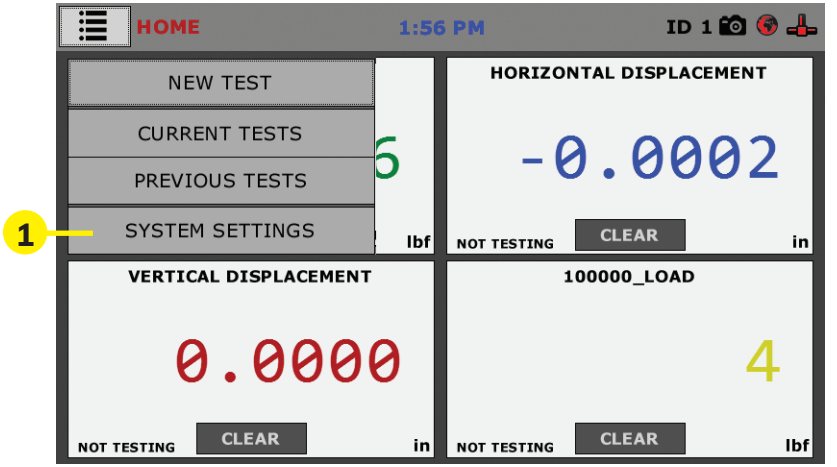
Once your compression machine is setup in its final position, you should have all instrumentation validated/calibrated by a certified calibrator. See calibration instructions in the Equipment Setup section of this manual.

How to Perform a Calibration

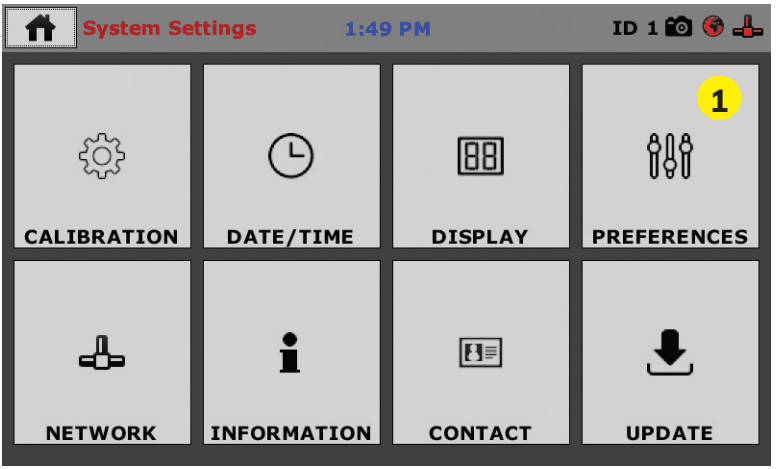
Humboldt recommends and standard lab practice dictates that your HCM-5080 should be calibrated periodically. For most, this period is usually a year, though other rules may apply to the frequency of calibration.

To perform a calibration, it will be necessary to either hire a calibration service to come in to calibrate your machine or you must have the necessary calibration equipment to perform this service.

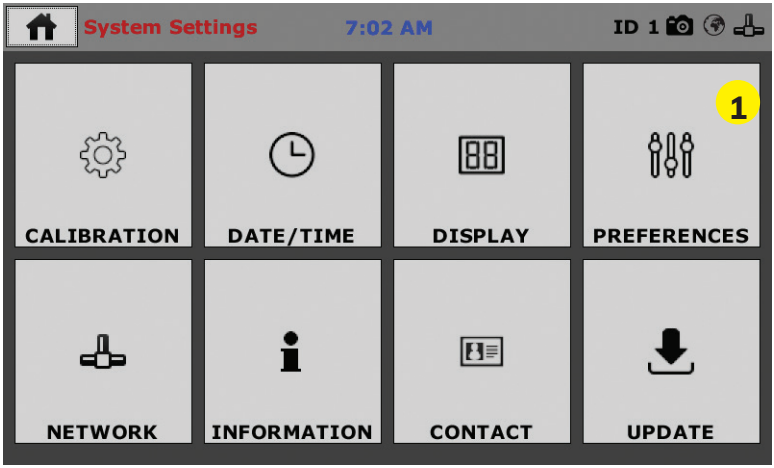
Before you can perform a calibration the compression machine must be in Manual Mode. To Set this, click on the Menu icon in the top left corner of the screen (1). When you click on this button, you will see a drop-down menu appear, see below.



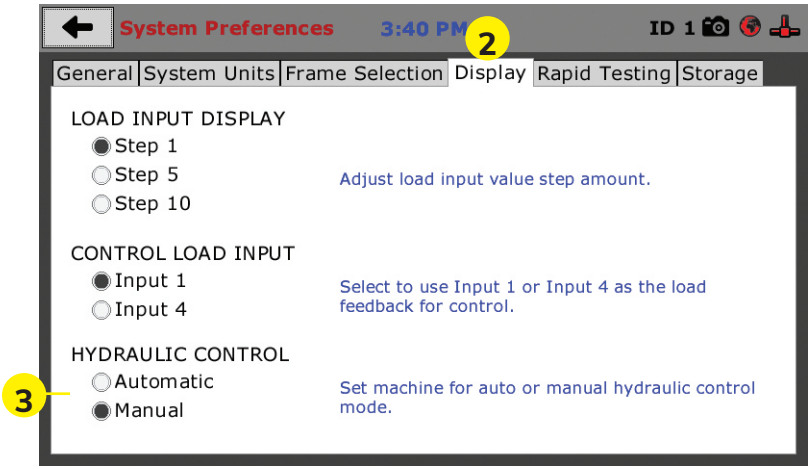
Navigate to the bottom of this drop-down menu and click on System Settings **(1)**. You will see the following screen.



Click on the Preferences tab in the top right corner **(1)**. You will see the following screen.

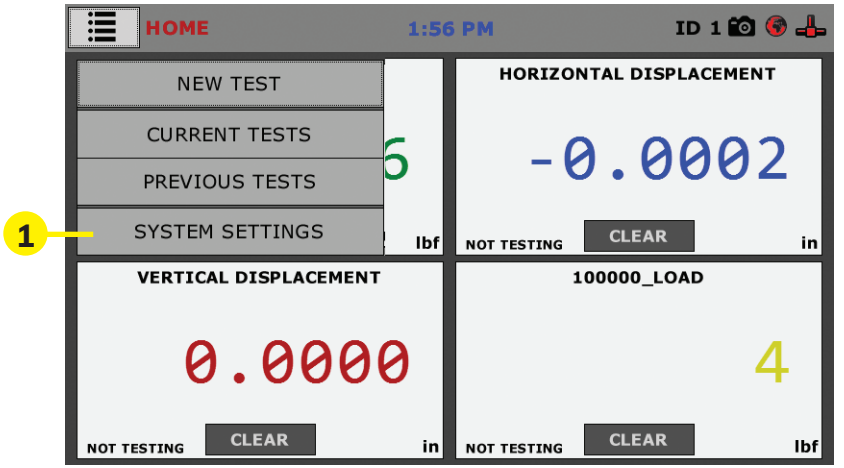


Click on the Preferences Tab **(1)**. On the next screen, click on the Display Tab **(2)**, you will see the following screen.

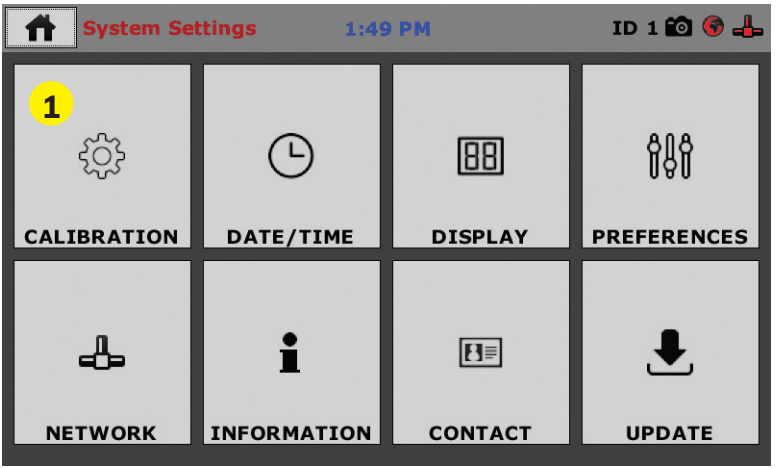


Go to Hydraulic Control **(3)** section and make sure Manual is selected. This is required for the Calibration operation.

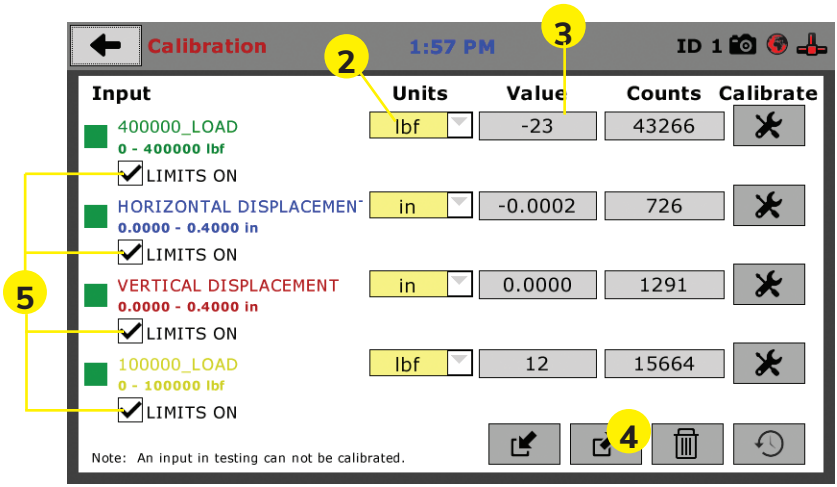
To begin a calibration, navigate to the Calibration section by clicking the Menu icon in the top left corner of the screen (1). When you click on this button, you will see a drop-down menu appear, see below.



Navigate to the bottom of this drop-down menu and click on System Settings **(1)**. You will see the following screen.



Click on the Calibration tab in the top left corner **(1)**. You will see the following screen.



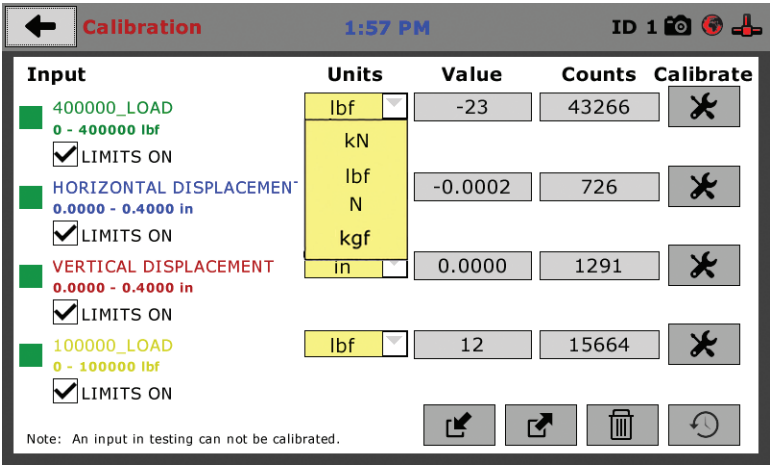
Calibration Input Screen
The Calibration Input Screen (above) is used to monitor and calibrate instrumentation and assign them to specific channels of the HCM-5080. The Calibration Input Screen provides a summary of the calibration status of each channel. At this time, verify the calibration information.

A green box at the left of a channel indicates that the channel has instrumentation assigned to it and that it is calibrated and ready for use **(1).**

Each channel has a “Limits On” check box (1). Use the Limits On to keep the machine from exceeding the sensor limits of the instrumentation. Selecting this option will safe guard you instrumentation by stopping all test and the motor before the test can exceed the limits of the sensors.

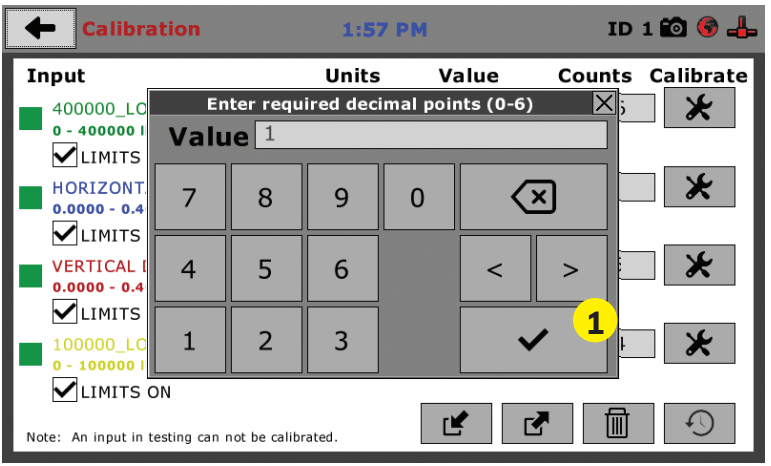
Note: An input cannot be calibrated during testing.

Units (2)
In this field, a calibrated instrument will display the units that were chosen for use at the time of calibration. This field can also be used to automatically toggle conversion of units between lb.-in. and SI units if the need arises. To view choices for types of Units, click on the Units field and the Unit choices will be displayed, see on next page.



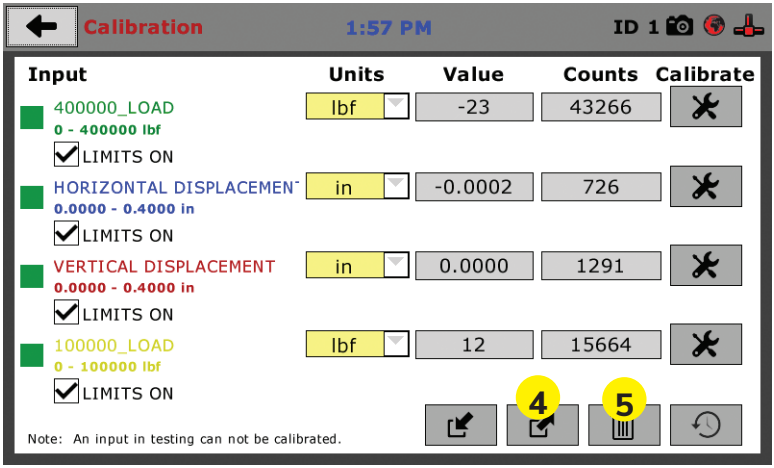
Value (3)

This field displays the current calibration value. For compression machines this value would typically be set to 1 decimal point. If the instrument is not calibrated, the unit will read “N/A”. Clicking on this field will bring up a window where you can enter the required decimal points required for the value. Once you have entered a value, Click the Check Mark **(1)** in the lower right-hand corner to save the value



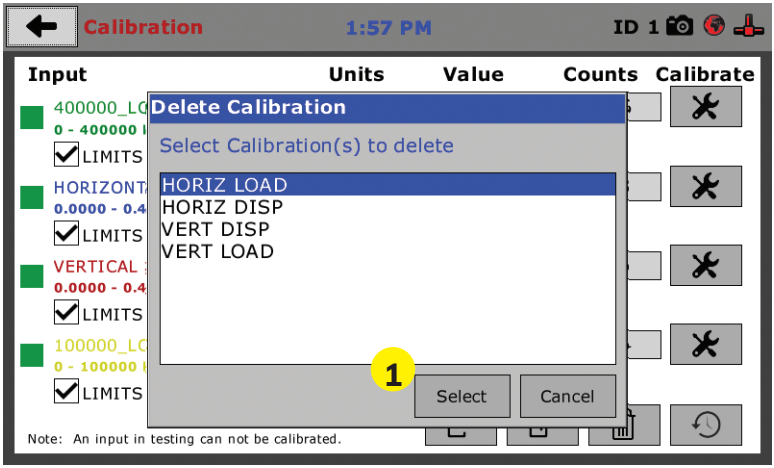
Performing a New Calibration

The first step in calibrating instrumentation to an input is to remove any calibration that is already being used for that input. To do this, Press the Export Calibration Button **(4)** (see next page) to select calibrations to export via USB. It is a good practice to export all your calibrations to a thumb drive. In case of a problem this practice allows you to recover your calibration data quickly.



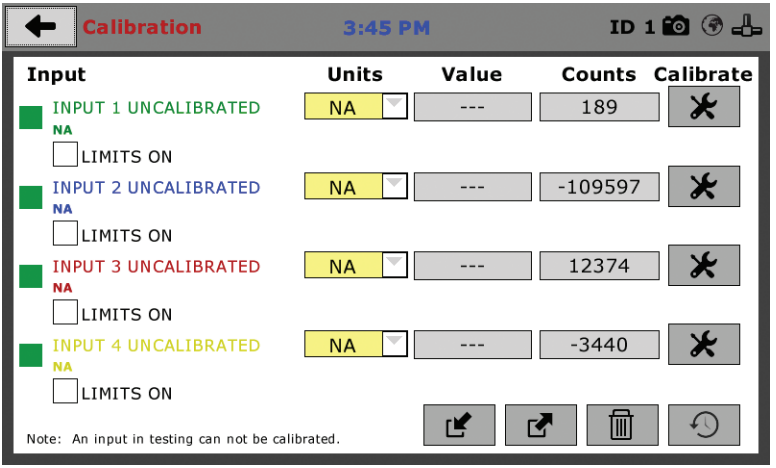
Once your calibrations have been saved, you will see a pop up screen that says: Calibration Export Successful.

To begin to remove existing calibrations, click on the trash can icon **(5)** to begin to erase the Input calibrations you wish to recalibrate. When you press the trash can icon, this screen will appear.



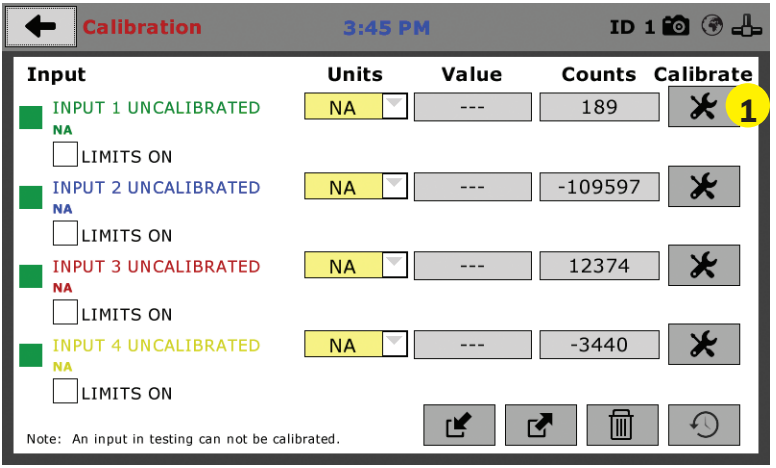
On this screen, select an Input calibration to delete, one at a time, and then press the Select button **(1)**. The calibration will be deleted. You can do this for all Inputs you wish to calibrate.

Once all Input calibrations have been cleared, your Calibration window should look like the one below with no Inputs calibrated.

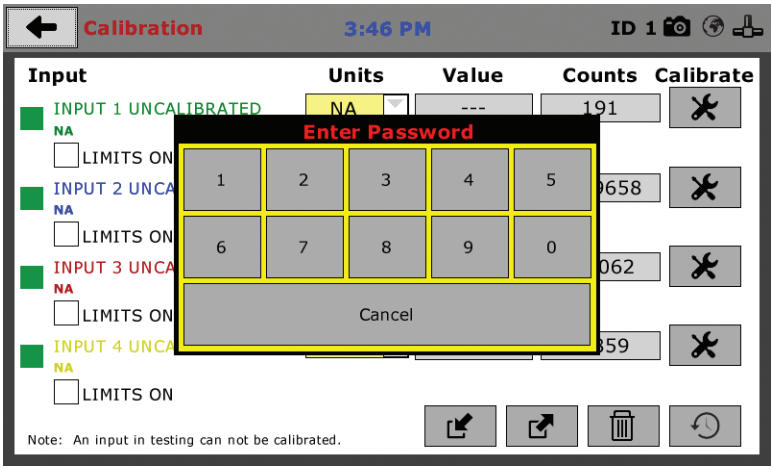


Calibrating your instrumentation to the appropriate Input requires a separate device, which can provide precise and specific loads or displacement, and, which has been certified to be accurate.

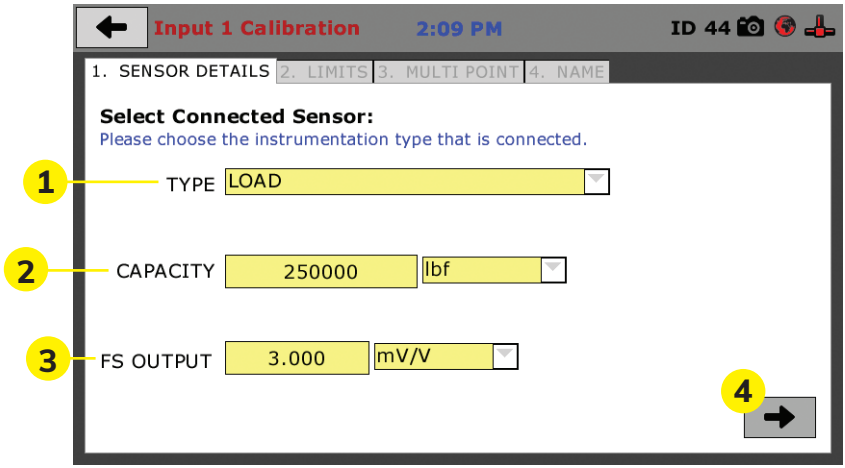
Once this has been done, click the Calibrate button next to the appropriate Input **(1)**.



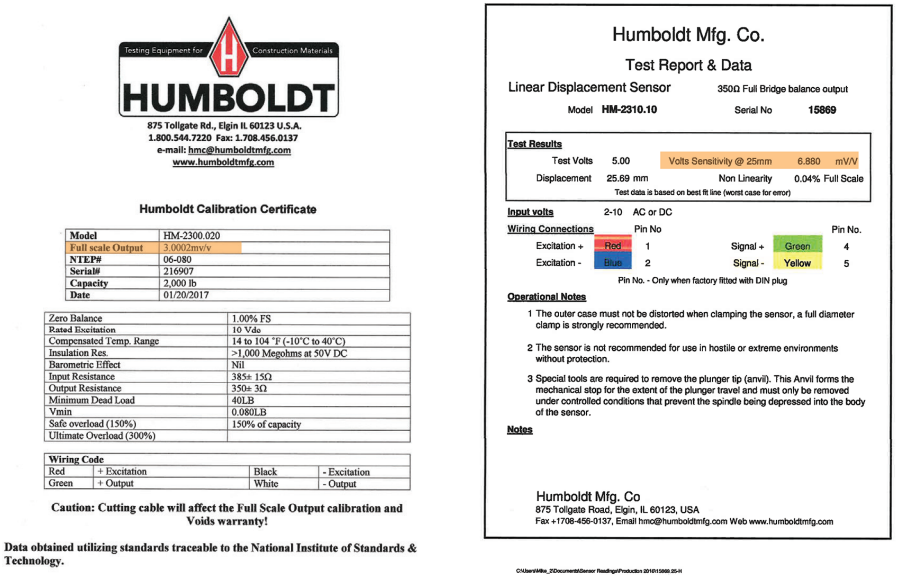
A pop-up window will appear requiring you to enter the password, which is **22234**.



Upon filling in the password, you will see this screen, Tab 1 Sensor Details of the Calibration settings.



On Tab 1, the Sensor Type **(1)** will default to Load. Clicking on the yellow popup menu allows you to change this if necessary. For Capacity **(2)**, fill in the maximum capacity of the sensor and choose either lbf, kN, N or kgf. For FS output **(3)**, refer to the calibration sheet, which came with the instrument you are using and enter it here, and then choose mV/V. The next page shows typical calibration sheets with the FS Output information highlighted in orange.



HUMBOLDT

Testing Equipment for Construction Materials

875 Tollgate Rd., Elgin IL 60123 U.S.A.
1.800.544.7220 Fax: 1.708.456.0137
e-mail: hmc@humboldtmfg.com
www.humboldtmfg.com

Humboldt Calibration Certificate

Model	HM-2300.020
Full scale Output	3.0002mv/v
NTEP#	06-080
Serial#	216907
Capacity	2,000 lb
Date	01/20/2017

Zero Balance	1.00% FS
Rated Excitation	10 Vdc
Compensated Temp. Range	14 to 104 °F (-10°C to 40°C)
Insulation Res.	>1,000 Megohms at 50V DC
Barometric Effect	Nil
Input Resistance	385± 15Ω
Output Resistance	350± 3Ω
Minimum Dead Load	40LB
Vmin	0.080LB
Safe overload (150%)	150% of capacity
Ultimate Overload (300%)	

Wiring Code			
Red	+ Excitation	Black	- Excitation
Green	+ Output	White	- Output

Caution: Cutting cable will affect the Full Scale Output calibration and Voids warranty!

Data obtained utilizing standards traceable to the National Institute of Standards & Technology.

Humboldt Mfg. Co.

Test Report & Data

Linear Displacement Sensor — 350Ω Full Bridge balance output

Model **HM-2310.10** — Serial No **15869**

Test Results

Test Volts	5.00	Volts Sensitivity @ 25mm	6.880 mV/V
Displacement	25.69 mm	Non Linearity	0.04% Full Scale

Test data is based on best fit line (worst case for error)

Input volts 2-10 AC or DC

Wiring Connections

	Pin No		Pin No.
Excitation +	Red 1	Signal +	Green 4
Excitation -	Blue 2	Signal -	Yellow 5

Pin No. - Only when factory fitted with DIN plug

Operational Notes

1 The outer case must not be distorted when clamping the sensor, a full diameter clamp is strongly recommended.

2 The sensor is not recommended for use in hostile or extreme environments without protection.

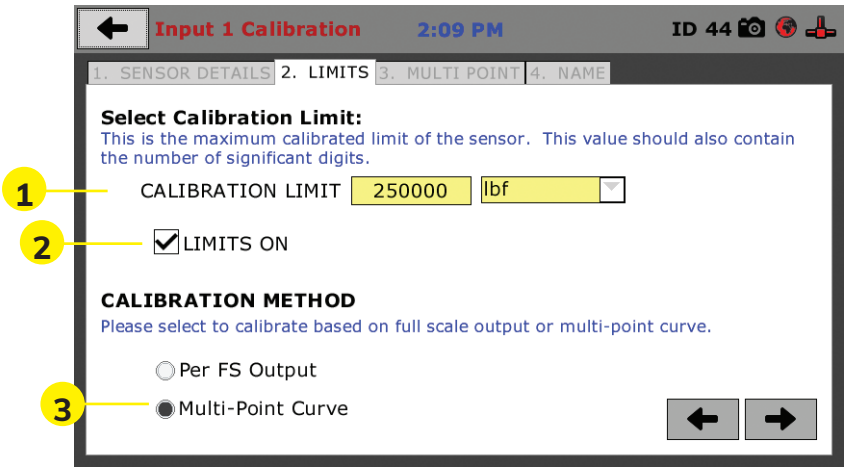
3 Special tools are required to remove the plunger tip (anvil). This Anvil forms the mechanical stop for the extent of the plunger travel and must only be removed under controlled conditions that prevent the spindle being depressed into the body of the sensor.

Notes

Humboldt Mfg. Co
875 Tollgate Road, Elgin, IL 60123, USA
Fax +1708-456-0137, Email hmc@humboldtmfg.com Web www.humboldtmfg.com

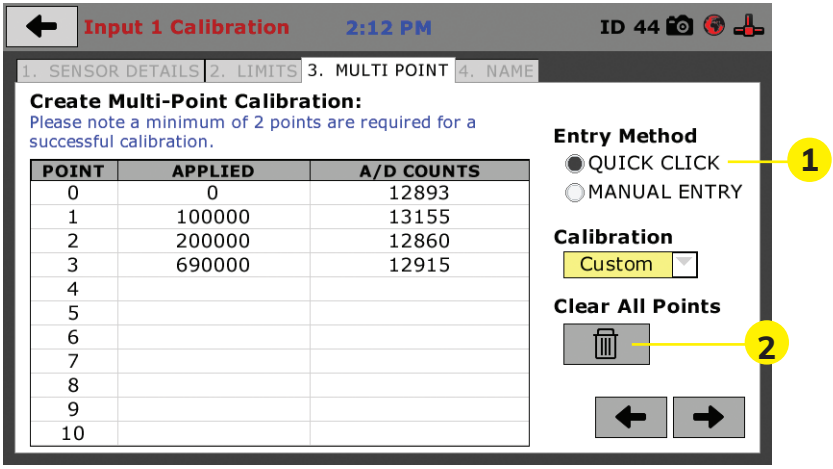
C:\Users\Mike_2\Documents\Sensor Readings\Production 20161015666.25-H

Once this is complete, click on the Right Arrow **(4)**, in the bottom right-hand corner of the screen to save these settings. You will be taken to Tab 2, Limits.



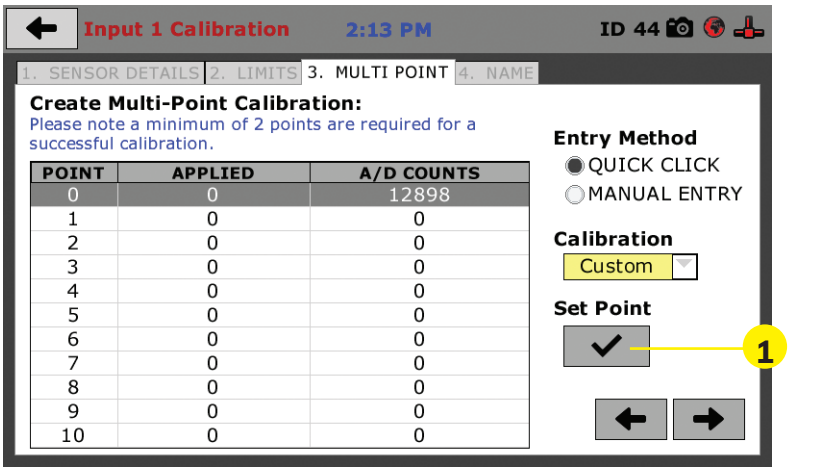
On Tab 2, in the Calibration Limit field **(1)**, enter the maximum calibrated limit of the sensor. This value should contain the number of decimal points you require for degree of accuracy, up to 5 points. Each channel has a “Limits On” check box (1). Use the Limits On to keep the machine from exceeding the sensor limits of the instrumentation. Selecting this option will safe guard your instrumentation by stopping all tests and the motor before the test can exceed the limits of the sensors. Calibration Method **(3)** should be set to Multi-Point Curve of up to a maximum of 10 points.

Choose Multi-Point Curve (Recommended calibration method) and click on the Right Arrow in the bottom right-hand corner of the screen, you will be taken to Tab 3 (see below).

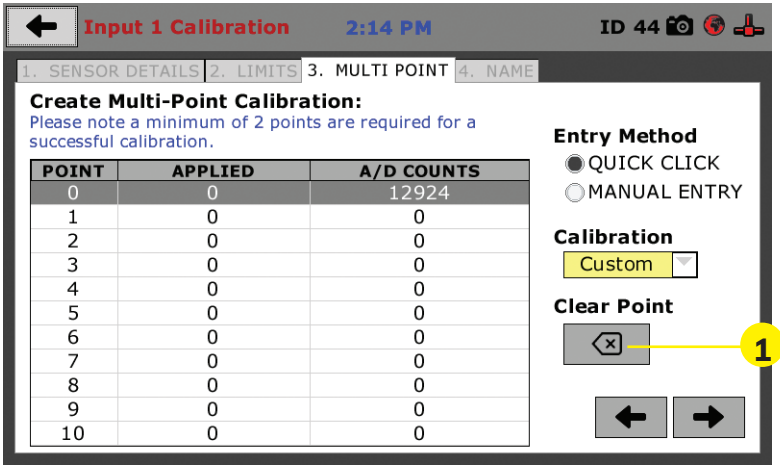


On Tab 3, choose the Quick Click Entry Method **(1)**. Calibration will automatically be set to custom. This allows you to set up a calibration curve of up 10 points. To begin the calibration procedure, click on the trash can icon to “Clear All Points” **(2)**.

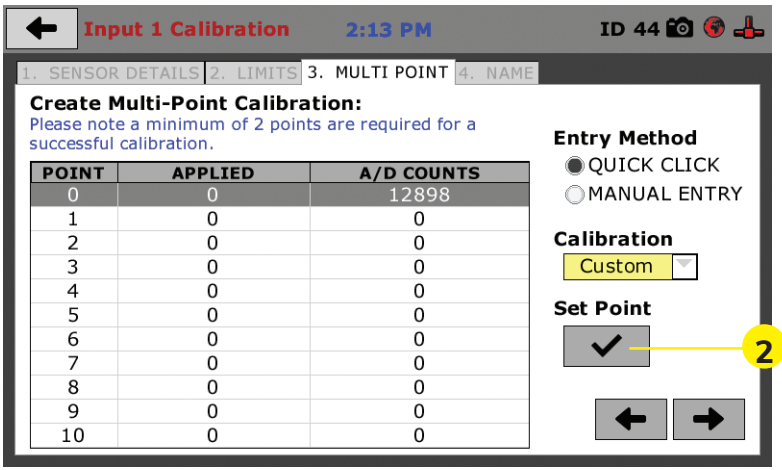
To begin calibrating the 250,000 lbf compression machine for our example we will begin by selecting the first row, or “Point 0”. Once the row is selected click on Set Point **(1)**, see below.



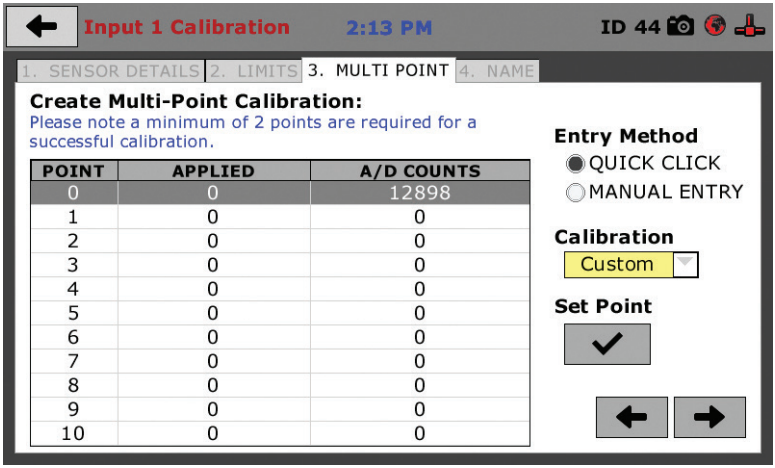
This selects the row for our zero point, and the Set Point will change to Clear Point (see below).



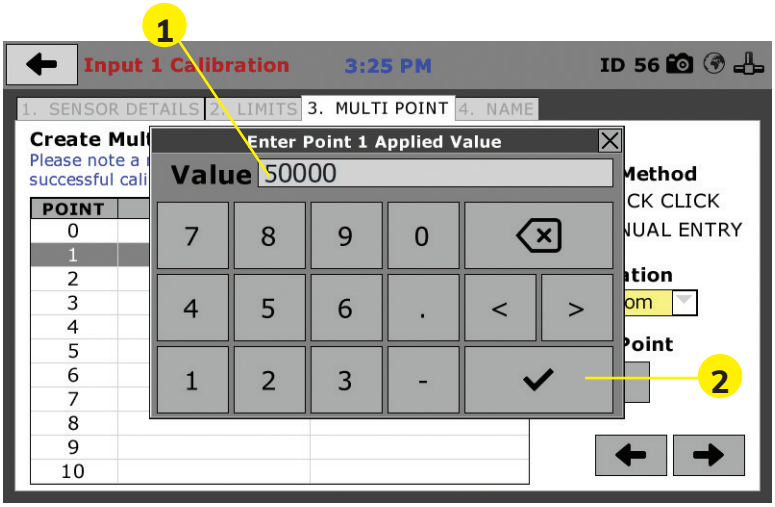
Click on Clear Point (1) and the number field under A/D Counts in Row 0 will switch to zero for a moment and then begin blinking with a reading. Click on Set Point (2)



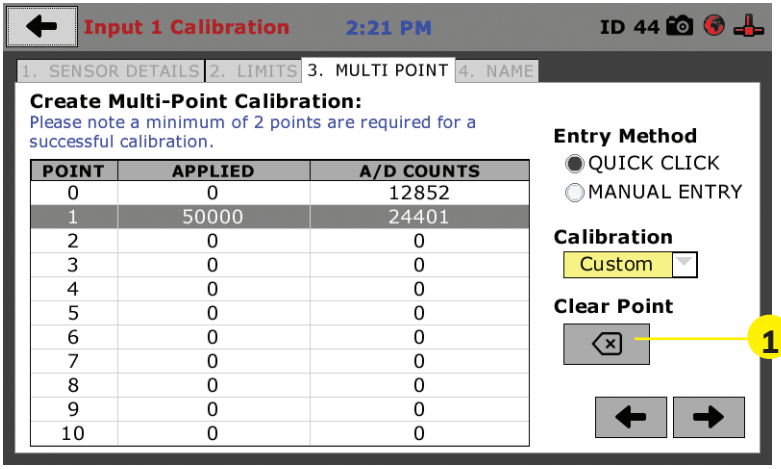
This sets our zero point calibration (see below). Since in this example we are calibrating a 250,000 lbf machine, we will calibrate our remaining points in 50,000 lbf increments.



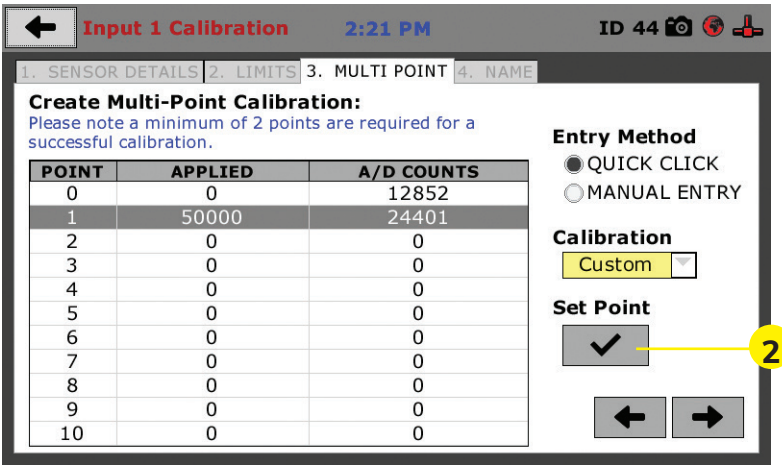
So, for our first calibration point, click on Row 1. A popup window will come up and in the Value field enter 50000 **(1).** Click the Check Mark **(2)** in the lower right hand corner of the window



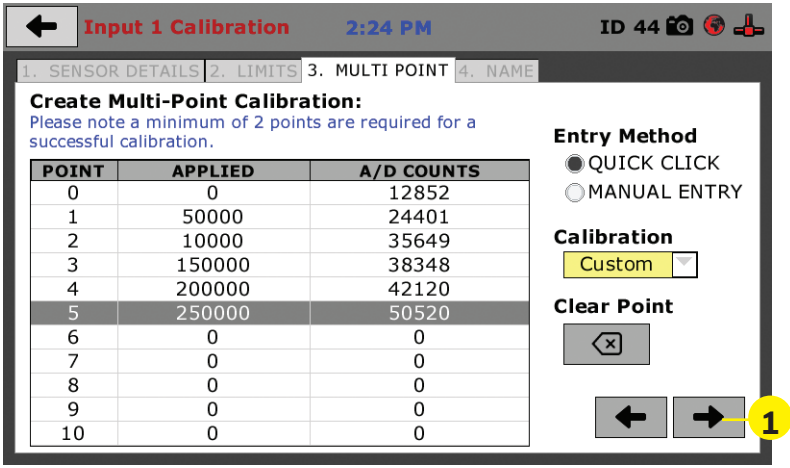
Your window will now have Row 1 selected and the Applied Column will read 50000 (see below)



As we did before, Click on the Clear Point button **(1)**. The A/D Counts field for Row 1 will begin to blink. Using the Motor Control Knob, located in front of the pump on the Compression Machine, slowly turn the potentiometer clockwise until you have reached a reading of 50,000 on your calibration device. At that point, Click on the Set Point button **(2)**

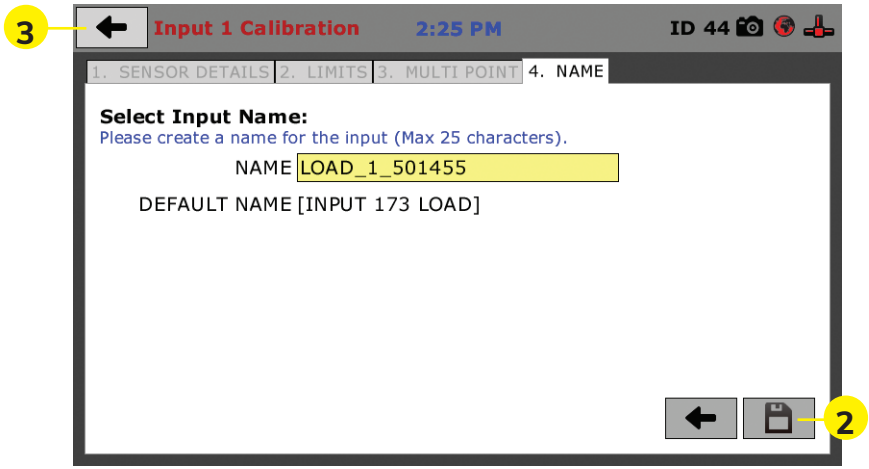


Continue this process until you have completed all rows of the calibration. The window will look like this, see below.



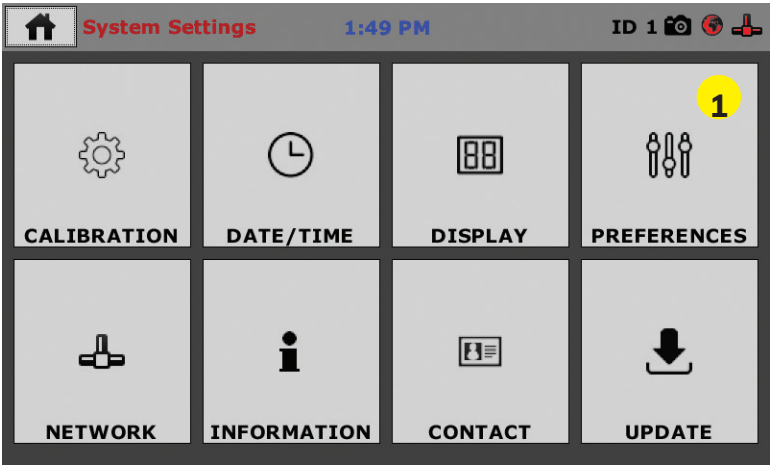
Once all Points have been calibrated, click on the Right Arrow **(1)** in the bottom right-hand corner of the screen. You will be taken to Tab 4.

On Tab 4, you will be asked to name the calibrated Input. Fill in your Input Name and click on the Save button **(2)** to save your calibration.

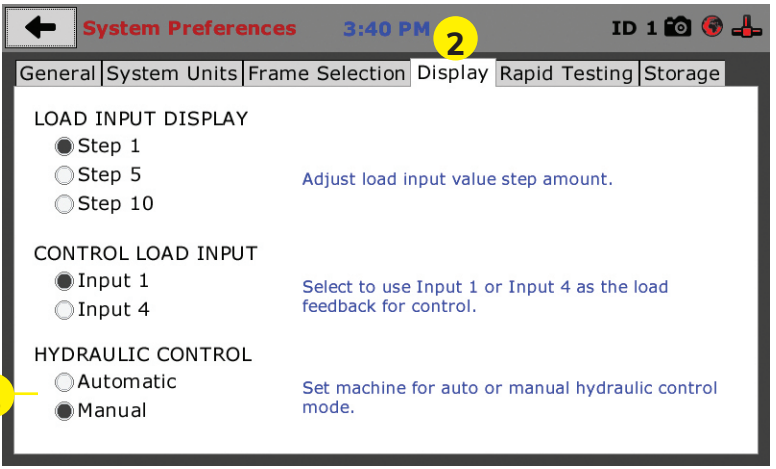


Your compression machine is now ready for use. To return to the Home Screen, click on the Arrow **(3)** in the upper right-hand corner of the screen.

After calibration, be sure to change the hydraulic control back to automatic. To do this, return to the System Settings window and click on the Preferences tab.



On the next screen, click on the Display Tab **(2)**, you will see the following screen



Go to Hydraulic Control **(3)** section and make sure Manual is selected. This is required for the Calibration operation.

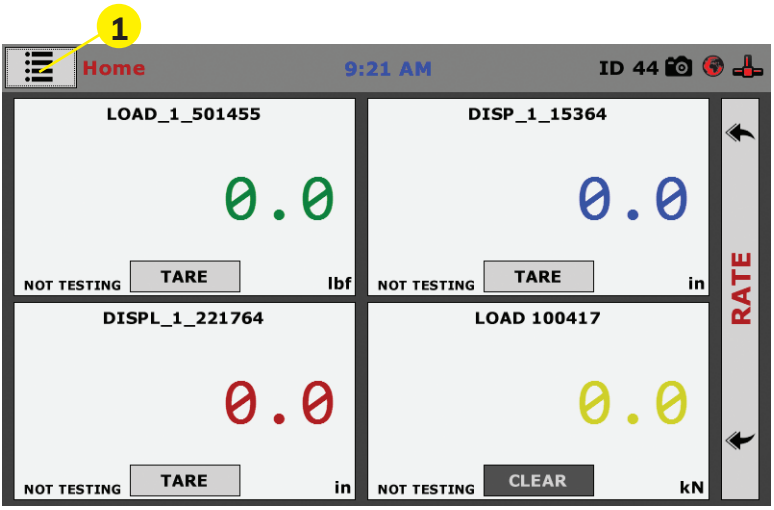
Test Setup


HUMBOLDT
5080
19375
1542
MANUAL SPEED CONTROL
HUMBOLDT
5080
POWER

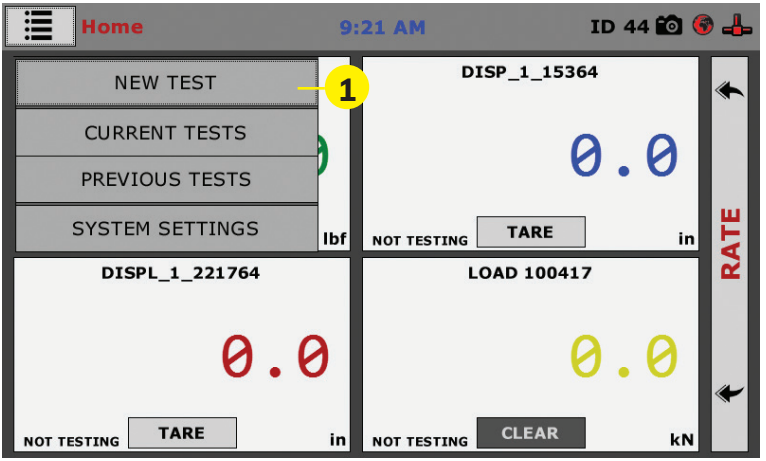
Test Setup

To begin a new test, such as ASTM C39 for cylinders, prepare your cylinder and mount it into the compression machine per the standard you are using for your test.

Click on the Menu icon in the top left corner of the Controller's screen **(1)**.

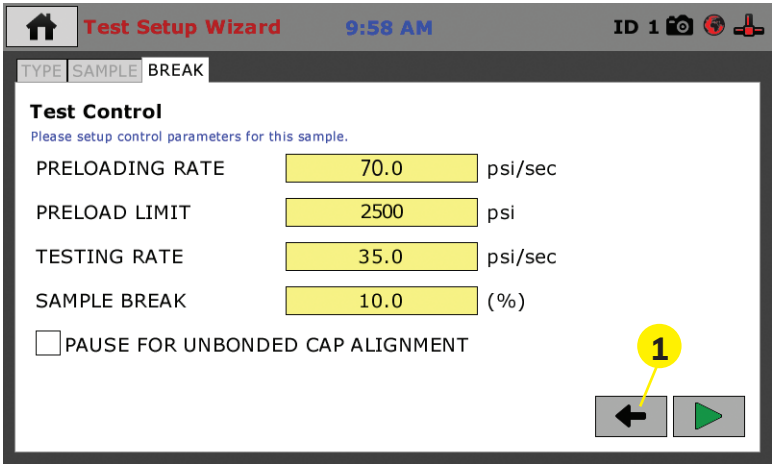


When you click on this button, you will see a drop-down menu appear, see below. Click on NEW TEST (1).

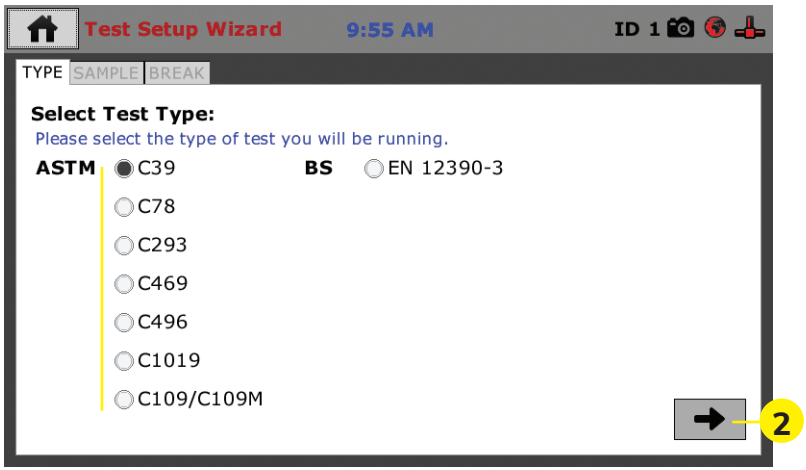


Test Setup Wizard – Select Test Type

Clicking on NEW TEST **(1)** above brings up the Test Setup Wizard (see below). The Controller will default to the third tab: Break. Here, if you know the settings you want to use, you can fill in the test parameters.

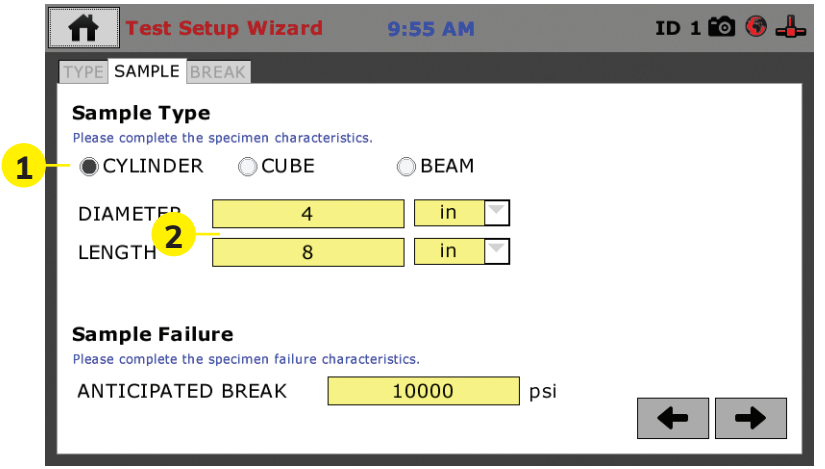


However, if you want to choose a Standard Test Type, click on the Left Arrow **(1)** twice to move to the first tab of the Wizard. Here you can select the type of test you want to perform — ASTM C39, C78, C293, C469, C1019, C109/109M and BS EN 12390-3.



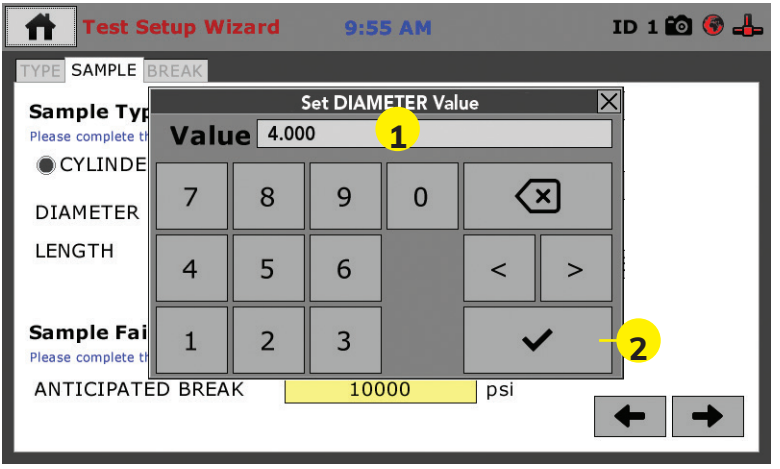
Select a test **(1)** from the choices provided on the screen above by clicking on the radio button next to the test. In this example we have chosen ASTM C39. Then, click on the Right Arrow button **(2)** in the bottom right-hand corner.

You will see the following screen.

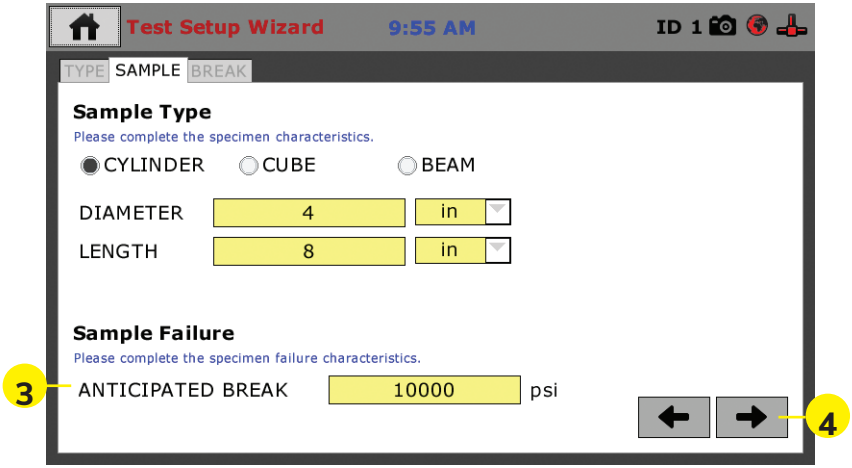


Test Setup Wizard – Sample Type

The screen above allows you to choose the type of test specimen **(1)** to be tested and to fill in its size in the corresponding yellow fields **(2)**. Because we chose ASTM C39 on the previous screen, the machine will automatically choose Cylinder as your Sample Type. When you click on the yellow fields, a Set Value screen will popup to allow you to set these values, see below **(1)**. Once you have entered a value, Click the Check Mark **(2)** in the lower right-hand corner to save the value, see below.

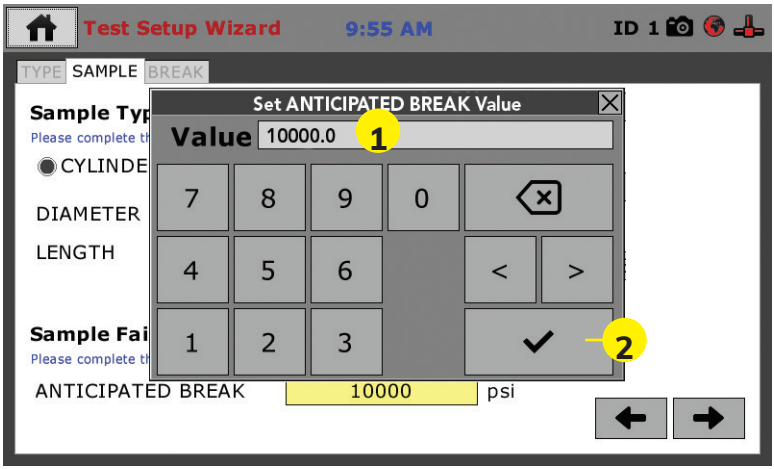


You will be returned to the Sample Tab of the Test Setup Wizard, below.



You can also provide an Anticipated Break (Sample Failure) value in the yellow field **(3)** provided.

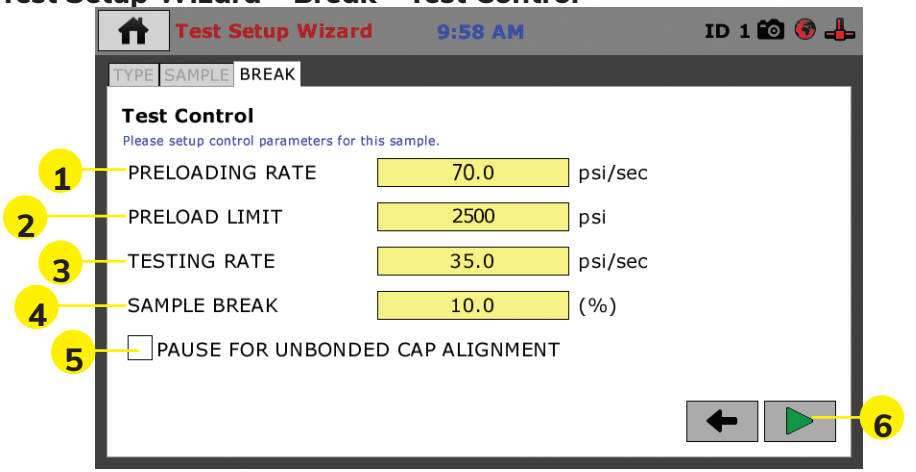
When you click on the yellow fields, a Set Value screen will popup to allow you to set these values, see below **(1)**.



Once you have entered a value, Click the Check Mark **(2)** in the lower right-hand corner to save the value. You will be returned to the Sample Tab of the Test Setup Wizard.

Once you have filled in the needed data, click on the Right Arrow button **(4)** in the bottom right-hand corner of the Sample Tab of the Test Setup Wizard to continue. You will now see the following screen.

Test Setup Wizard – Break – Test Control

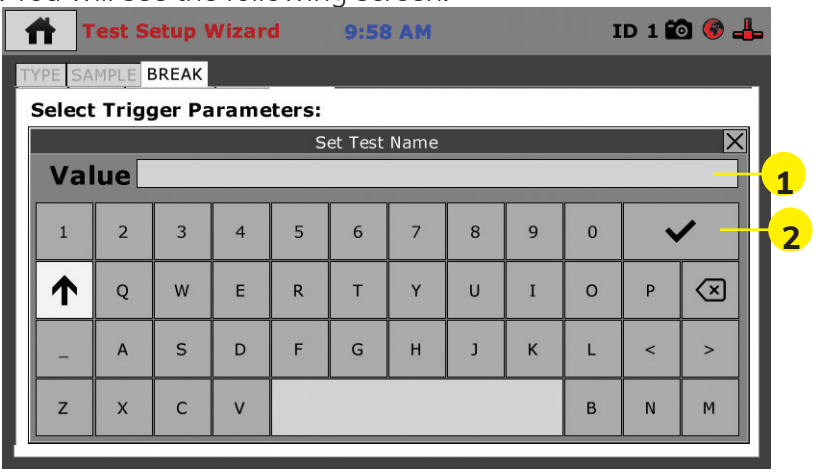


On this screen, you will enter values, which dictate your test parameters. To begin, you can set a Preloading Rate **(1)** and Preload Limit **(2)**, which establishes a base load prior to the actual test. If you specified the specific test you want to run on the Type tab and the "anticipated break" on the Sample tab, these fields will have been auto populated with the correct values.

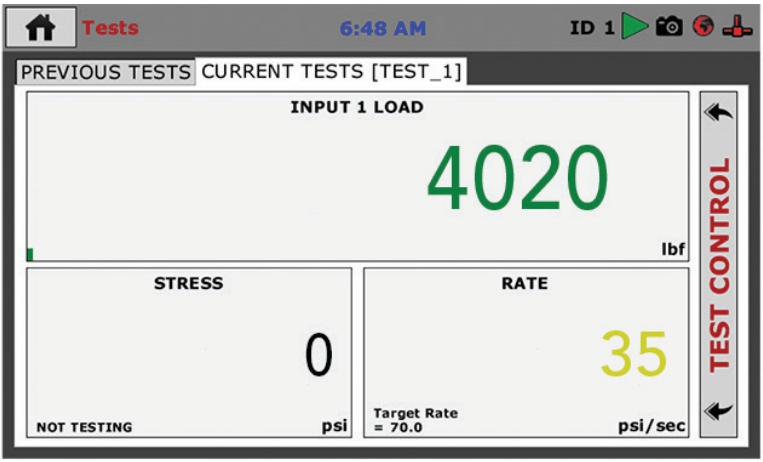
You will also enter a value for the Rate of the Test **(3)** in accordance to the ASTM Spec. The Sample Break **(4)** value refers to the percentage of the initial break load the test will continue before stopping. There is also a check box **(5)** for providing a pause in the process to allow for alignment of an unbonded cap, if necessary.

Test Setup Wizard – Start

You are now setup to run a test. Proceed with the test by pressing the Green Arrow **(6)** in the bottom, right-hand corner of the screen above. You will see the following screen.



In the Value Field **(1)** (above) give your test a name. When finished, click on the check mark key **(2)** to save. You will see the following screen.

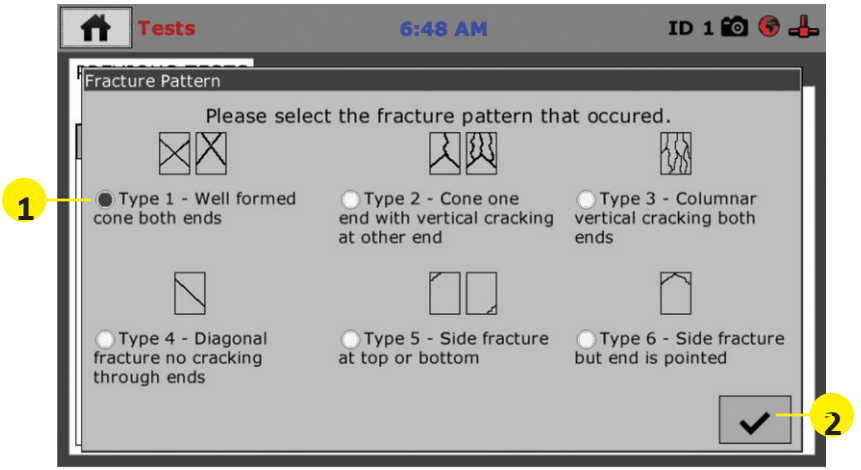


Once the test name has been saved, the controller will begin the test. Since the HCM-5080 controls both the pump and logging functions, the controller facilitates the testing operation by stepping through the preload and the testing sequence automatically.

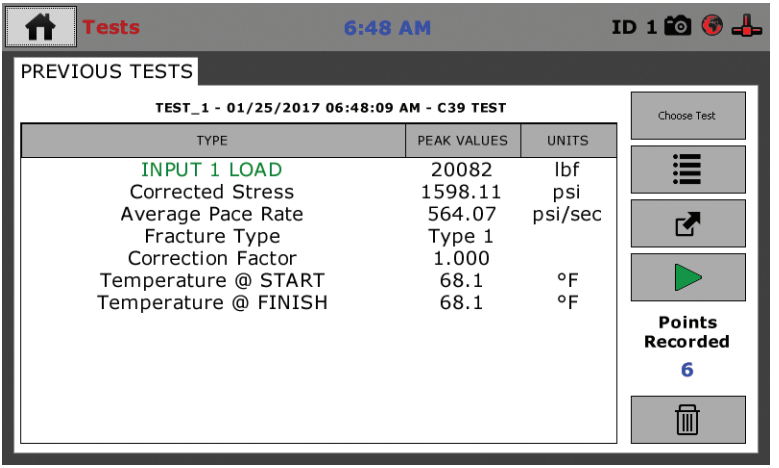
The controller will engage the compression machine and move the platen at a fast rate of speed until it senses the test specimen. At that point it will reduce the rate of travel to the Specification you have chosen for your test.

When the specimen breaks, the controller will continue to log until it detects a reduction in the Load of 10% of the Peak Value. At this point it will automatically stop the test and return the platen to the home position.

When the test reaches its end, the screen below will come up on the Controller. Here, you need to select the fracture pattern that occurred during the test by clicking the radio button next to the illustration that best represents the break **(1)**. Once you've selected a fracture pattern, click on the Check Mark **(2)** in the lower right-hand corner of the screen to continue.

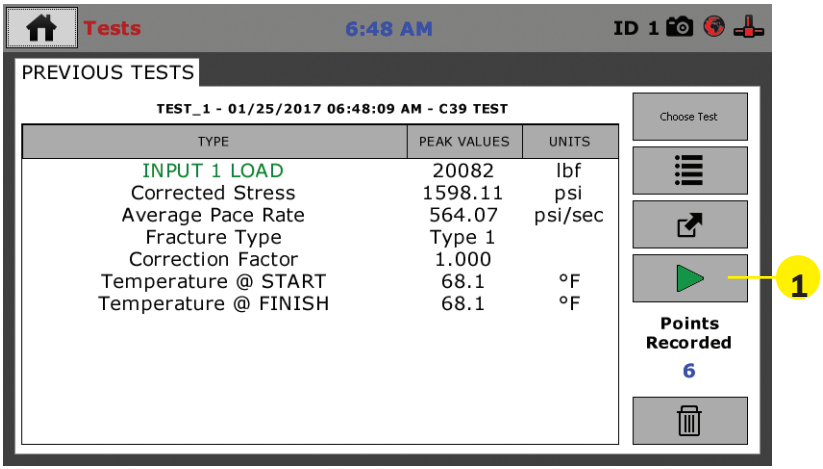


You will now see the screen below, which provides the results of the completed test.



If you plan on breaking multiple samples using the same parameters and you have selected Fast Testing on the Rapid Testing Tab of the System Preferences.

You can set your next specimen into the compression machine and push the green arrow button to begin a new test. **(1).**

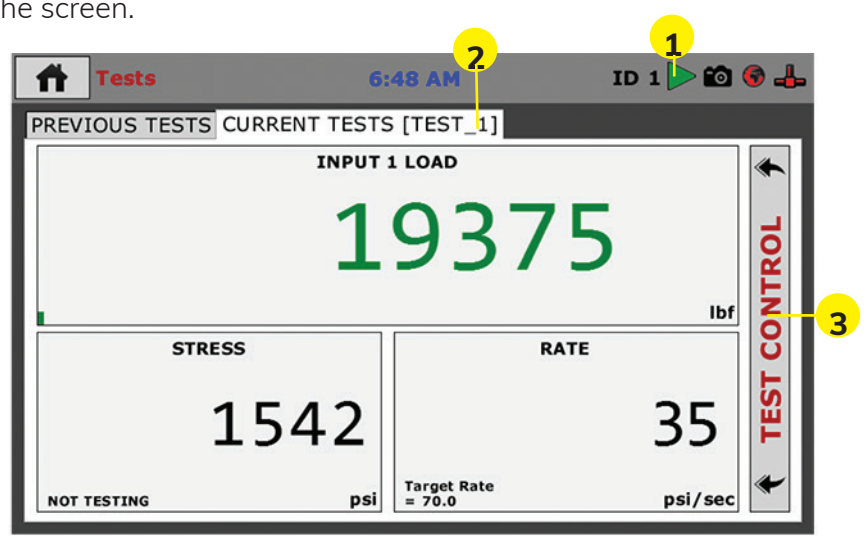


A new test will begin and each new test will be given a unique name by adding a number at the end of the name you chose previously for these tests.

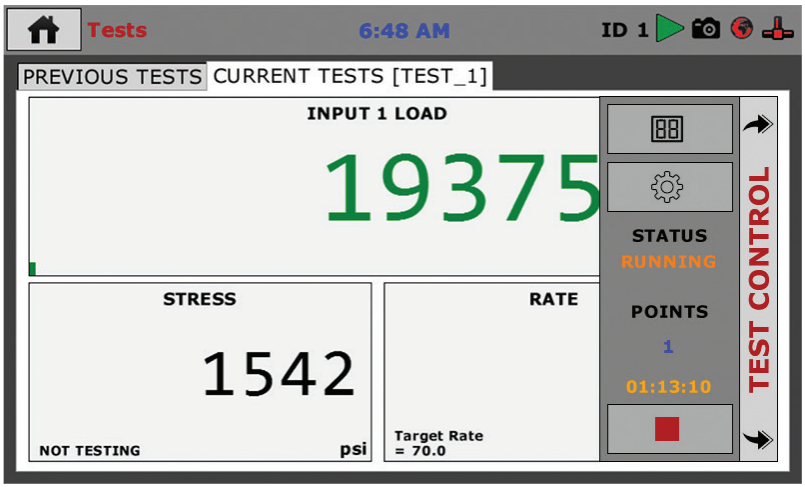
To continue for each new test, follow the instructions outlined previously on how to run a test above. If you didn't choose Fast Testing, you will have to name each test as described previously.

Tests — Test Control Tab

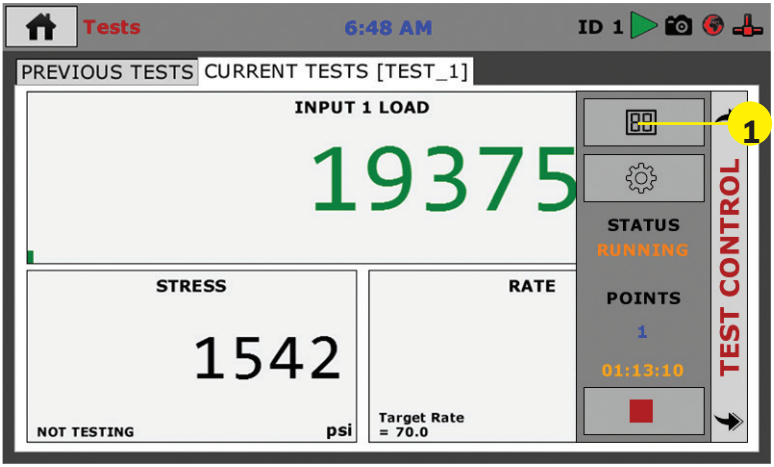
Below is the Current Test Screen, the Green Arrow **(1)** in the screen header indicates that a test is currently running. The name of the test **(2)** is shown in the current tab. To access different views, control or stop the current test, click on the Test Control tab **(3)** at the right of the screen.



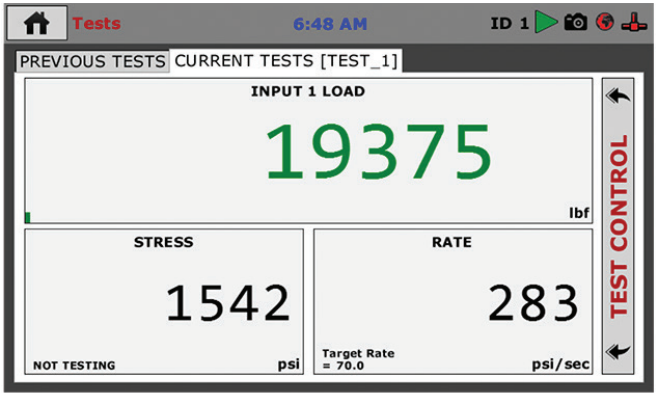
Clicking on this tab opens the Test Control panel, see below.



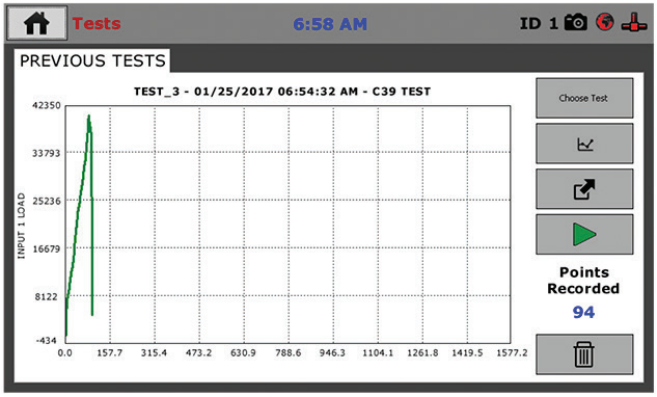
To Toggle through the different available views of a current test, click on the Switch Views button **(1)**.



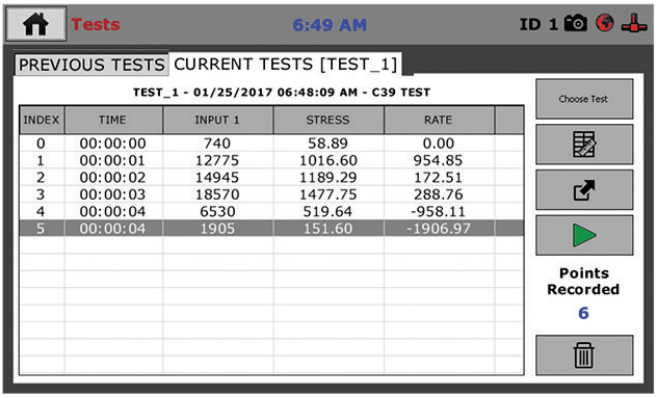
The views that are available are: Live Readouts, Graph or Tabulation. Examples of these screens are below.



Live Readouts

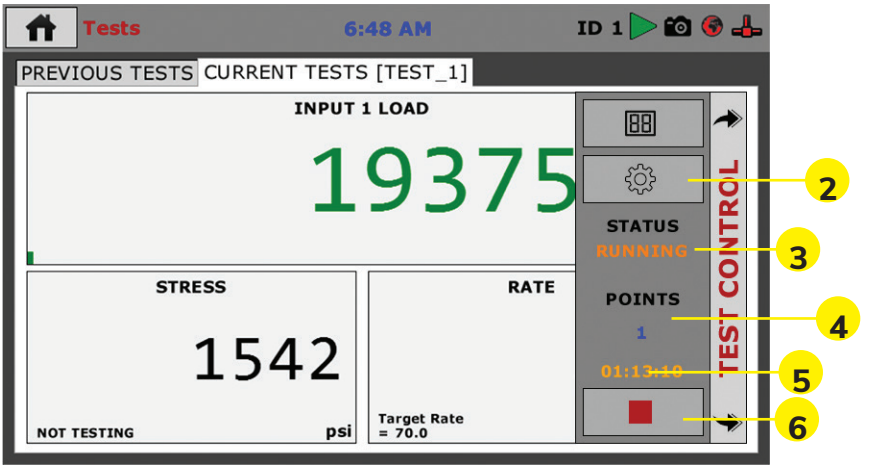


Graph



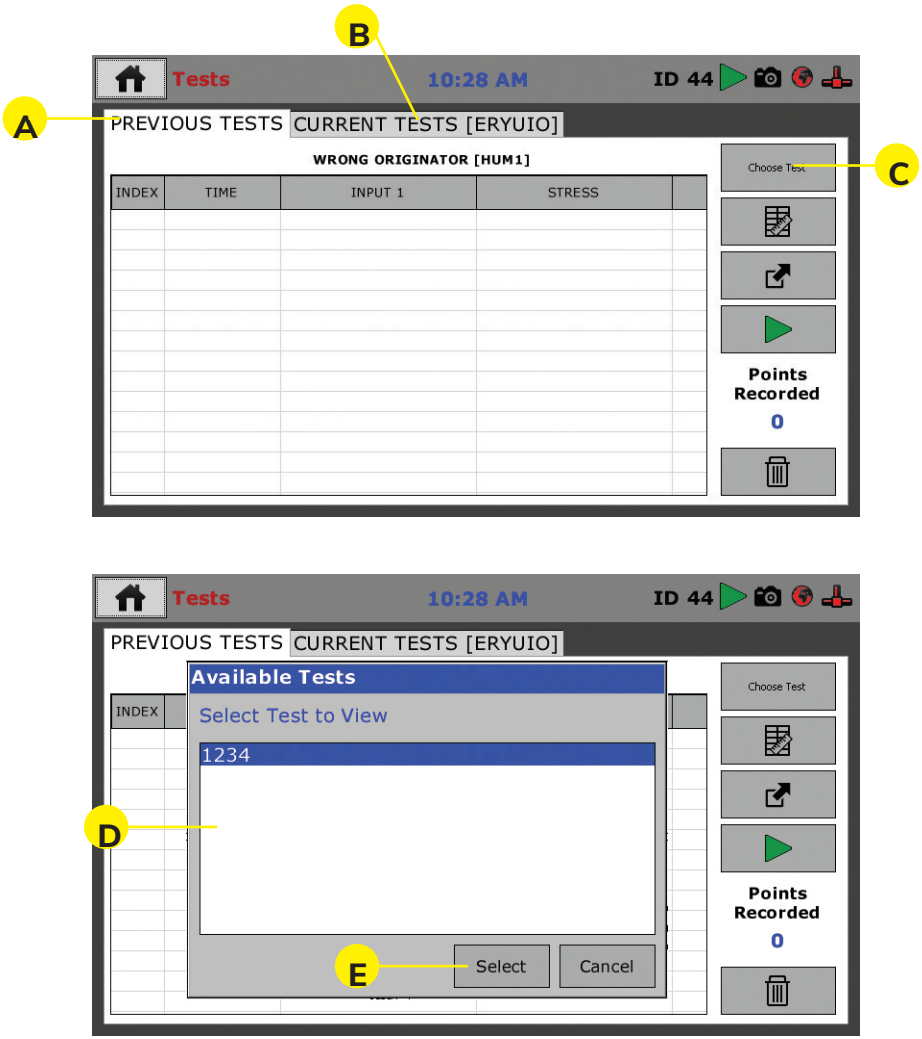
Tabulation

In the Tabulations view, the controller will record a reading every second of the test. The latest readings will be at the bottom.



Also available on the Test Control Tab are the following items:

Test Selection (2) By clicking on the Test selection button **(2)** brings up the screen below. Here you can toggle between the Previous Tests tab **(A)**, which shows previous test data and the Current Test tab **(B)**. To select a previous test Click the Choose Test button **(C)**. A popup menu will appear listing the previous tests to choose from **(D)**. Choose the test you want to view from the list and then click Select **(E)**.



Status Monitor (3), This indicates whether a test is running or not running.

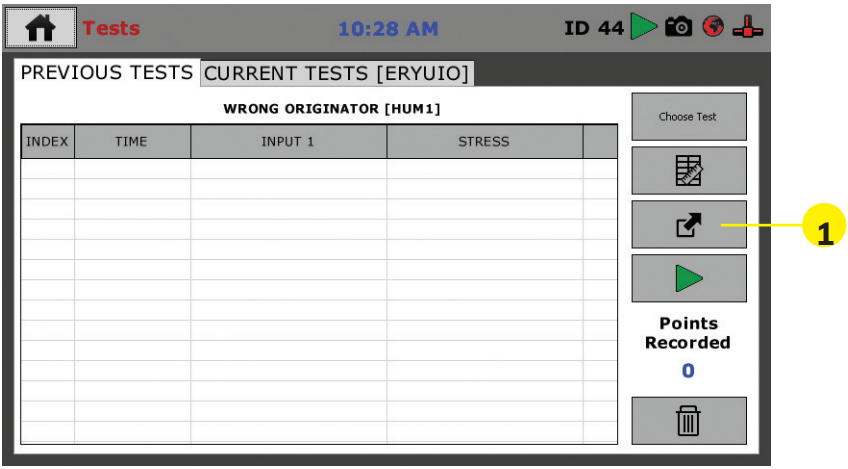
Points (4) indicates how many total test points have been recorded in the current test at any given time.

Start Time (5) This indicates the starting time that the current test was triggered.

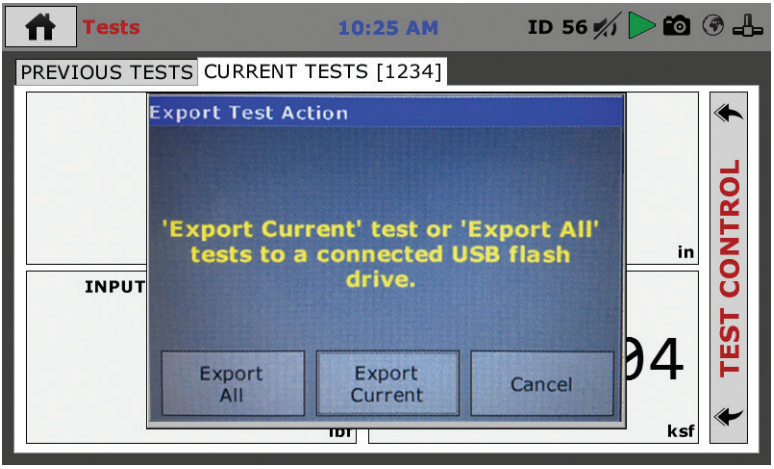
Stop Test button (6), When clicked, this button will stop the current test.

Exporting Data — Test Control Tab

To export test data for use with Microsoft Excel® and other similar programs, First insert a USB flash drive into the USB slot on the front of the HCM-5080. Next, Click on the Export button



You will see the following screen. You have the choice of exporting All tests or just the Current test. Your choice will be loaded to the installed USB flash drive.



Test Data is exported in Humboldt HTD format. To read this data, you will need Humboldt's HM Data Download software. This software can be downloaded from our website at the following URL: https://www.humboldtmfg.com/support/software.php

HCM-5080.3F Specifications

The Humboldt HCM-5080 Controller

Humboldt's HCM-5080 compression machine controller is designed to make breaking cylinders, cubes and beams easier and more precise. This controller delivers a whole new level of speed, accuracy and ease-of-use for compression machines. Its 7" color screen provides a large and clean layout of information and makes quick, visual monitoring a breeze.

The HCM-5080 Controller is set up with four independent data channels and is configured at the factory to have two channels to read load and two channels to read displacement— one for horizontal and one for vertical. This design allows you to set up your configuration to include your compression machine to break cylinders and perform compressometer and extensometer tests, as well as another machine to break cylinders, all of which can be controlled from the single HCM-5080 Controller.

Testing Standards

The HCM-5080 controller incorporates these standard tests in its design: ASTM C39, C78, C293, C469, C496, C1019, C109/C109M and EN 12390-3. Just pick the test you want to run as you configure your test and the controller will handle it. And, at the end of the test, the piston can be set to return to the start position for the next test, speeding up testing operations. The controller can also automatically hold a load at any desired point for a specific time.

Controller

The HCM-5080 controller provides a 7" (178mm) touch-screen controller, giving you finger-tip control of your testing processes, as well as providing real-time, visual views of your data in both tabular and graph formats. The touch screen provides colorful, at-a-glance monitoring of testing functions without a computer.

Operators can see all the data in several formats at the machine while the test is running. Data can then be viewed simultaneously or downloaded later to a computer in the lab, in the next room or at a different location.

Controller Features:

- 4-channel data acquisition
- Hi-res, 7", waterproof, touch-screen provides total control and real-time graphical display of tests
- Machine control and data acquisition via machine touch-screen
- Real-time graphical chart and numerical display of test via touch-screen display
- Effective sampling rate of 1 reading per second
- Stores up to 1000 tests with 3000 points per test
- USB port provides data transfer to thumb drive, PC or tablet, plus it can power a wireless access point for wireless communications

HCM-5080 Controller Specifications	
HCM-5080 HCM-5080.4F	120V 60Hz 220V 50/60HZ
Display	7” (178mm) VGA (480 x 800) Resistive-touch screen
Processor	Dual 32-bit ARM
RAM	4GB
Analog to digital converter	24 bit
Data acquisition	4 Channels
Data Speed	1000Hz (1kH)
Logging speed	1 reading per second
Multi-test storage	1000
Points per test	3000

HCM-5080 Controller Includes	
HCM-5080.800	Controller
HCM-5080.900 (120 60Hz) or HCM-5080.900.4F (220 50/60Hz)	Pump Controller
HCM-5080.925	Hydraulic Power Pack
HCM-5080.950	Power Pak Installation Kit

Accessories	
HCM-4177	Pressure Transducer, 10,000 psi with Cable and Plug
HCM-4177.1	Pressure Transducer, 10,000 psi
HCM-4177.4	Cable for Pressure Transducer 10,000 psi with Plug
HCM-005050	ISO VG 46Hydraulic Oil, 1L (2L required)

General Warnings

Do not start machine without verifying pump has been filled with oil. Use appropriate PPE while operating device. Do not operate without closing safety cage. Keep body parts clear of moving surfaces when operating machine. Ensure all motion has stopped prior to adding or removing testing samples or support equipment.

Safety Warnings

Operators should take care to operate this machine under maximum load restrictions. The machine is programmed at the factory to provide safety shutdown if the upper or lower maximum travel is exceeded, as well as if the upper instrument calibration is exceeded.

Electrical Warnings

Typically, there is no reason for the operator to open the machine. However, if the customer's engineers attempt to change settings to the circuit board connected to the back panel, the machine must first be unplugged. Unplugging the internal connection to the back panel circuit board while the machine is under power will result in permanent damage to the circuit board.

Important Notice

The information contained herein is supplied without representation or warranty of any kind. Humboldt Mfg. Co. therefore assumes no responsibility and shall have no liability, consequential or otherwise, of any kind arising from the use of the described equipment contained in this manual.

Updated Products

The manufacturer reserves the right to change or modify product design or construction without prior notice and without incurring any obligation to make such changes and modifications on products previously or subsequently sold.

Fitness for Application

The manufacturer makes no recommendations or claims regarding fitness for applications other than the specific tests as defined in this User Guide.

Unpacking

Initial inspection should include checking for physical damage during shipping and obvious external damage to the product.

Package contents are defined by your packing list. Each Loader is configured according to customer specifications. In your inspection, make certain that the contents of your shipment match the documentation provided by your packing list.

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Any person(s) and /or organizations that attempt or accomplish the above violation or knowingly aid or abet the violation by supplying equipment or technology will be subject to civil damages and criminal prosecution.

Warranty

Humboldt Mfg. Co. warrants its products to be free from defects in material or workmanship. The exclusive remedy for this warranty is Humboldt Mfg. Co., factory replacement of any part or parts of such product, for the warranty of this product please refer to Humboldt Mfg. Co. catalog on Terms and Conditions of Sale. The purchaser is responsible for the transportation charges. Humboldt Mfg. Co. shall not be responsible under this warranty if the goods have been improperly maintained, installed, operated or the goods have been altered or modified so as to adversely affect the operation, use performance or durability or so as to change their intended use. The Humboldt Mfg. Co. liability under the warranty contained in this clause is limited to the repair or replacement of defective goods and making good, defective workmanship.

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Testing Equipment For Construction Materials

HUMBOLDT

Retrofitting the HCM-5080 Controller

Testing Equipment For Construction Materials

HUMBOLDT

The HCM-5080 Automatic Controller can be retrofitted to most concrete compression machines available in the market today. These instructions provide a basic explanation of how to prepare and existing compression machine for retrofitting and installing the HCM-5080 to it.

Initial Preparation

To begin retrofitting you existing compression machine with the Humboldt HCM-5080 Automatic Controller, you will need to remove the existing controller and pump. To begin this process:

1. Place a bucket or other container, capable of holding all the oil in the system, under the oil drain of the compression machine.
2. Remove oil plug and allow the oil to drain into the container.
3. Once the oil is drained, replace the drain plug.
4. Remove the existing pump and controller from your compression machine, including all brackets and mounting hardware.

Installing Humboldt Pump Bracket

To begin installing the new Humboldt pump, locate the pump mounting bracket, and using the bracket as a guide, mark the position for two mounting holes on the lower section of the compression machine. To ensure that the mounting plate and the pump are level, use a bubble level to make sure the mount is level.

1. Drill and tap two (2) 1/4 -20 UNC holes using the placement determined above.
2. Using the supplied bolts and the bracket, bolt the bracket to the compression machine. See photo #1 on next page.

Photo #1— mounting pump support bracket

Mounting the Hydraullic Pump

To begin mounting the pump for your compression machine, first mount it to the pump support bracket. The pump is attached by four (4) threaded studs, which thread into the holes on the bottom of the pump and are secured to the mounting bracket with (4) lock washers and nuts from the underside of the mounted bracket. When installing be sure to insert the rubber shock spacers to each threaded stud between the pump and the top of the bracket.

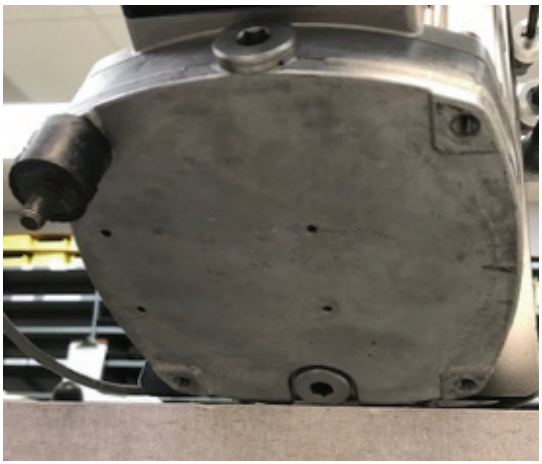

Photo #2— Installing rubber shock spacers

Your machine with the mounted pump assembly should look like the photo below.

Photo #3— Pump mounted to support bracket

Installing Humboldt HCM-5080 Controller

To install the Humboldt Controller, locate the controller mounting bracket, and using the bracket as a guide, mark the position for two mounting holes on the upper section of the compression machine. To ensure that the mounting plate and the pump are level, use a bubble level to make sure the mount is level.

1. Drill and tap two (2) 1/4 -20 UNC holes using the placement determined above.
2. Using the supplied bolts and the bracket, bolt the bracket to the compression machine. See photo #4 below.
3. Mount the HCM-5080 Controller to the bracket you just attached to the compression machine. See photo #5 below. There are four (4) bolts supplied for this step.

Photo #4— mounting controller bracket

Photo #5— attaching controller to support bracket

4. Your compression machine should look like Photo #6 (see next page) when you are done.

Photo #6— Controller and Pump mounted to Compression Machine

Hydraullic Pump Installation

5. Using the supplied hydraulic hose, connect one end to the "U" fitting on the HCM-5080's hydraulic pump assembly (Photo #7). Be sure to wrap the threads with Teflon tape.

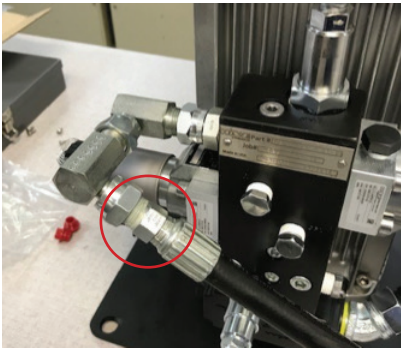

Photo #7— Attach hose to hydraullic line on pump.

Hydraullic Pump Installation, cont.

6. Next, connect the other end of the hydraulic hose to the compression machine's piston (Photo #8).

Photo #8— connecting the hydraulic hose to the compression machine

7. Unscrew the red oil cap located on the top of the hydraulic pump assembly. (Photo #9).

Photo #9— Location of red oil cap, which needs to be removed.

8. Insert funnel and fill pump resevoir with 2 gallons of VG 46 hydraulic oil. (Photo #10) Then replace red oil cap and seal.

Photo #10— Fill pump with hydraulic oil.

9. Connect gray cable with 8-pin round connector coming from the hydraullic pump controller to the HCM-5080 controller, (Photo #11).

Photo #11— connecting the pump controller to the HCM-5080 controller.

10. Now, install the AC power connector coming from the hydraulic pump controller to the back of the HCM-5080 controller. (Photo #12).

Photo #12— connecting AC hookup from the pump controller to the HCM-5080 controller.

11. Connect the cable with the 6-pin circular connector to the end of the Pressure Transducer. (Photo #13).

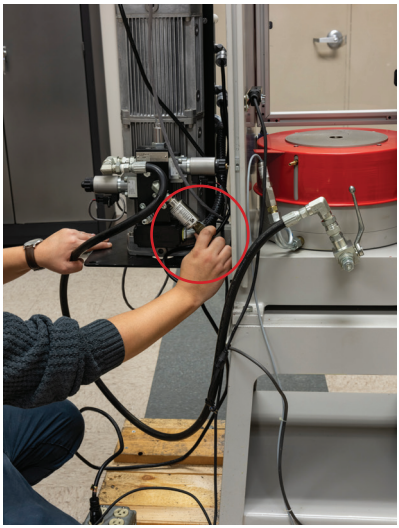

Photo #13— connecting cable with the 6-pin connector to the Pressure Transducer.

12. Connect the cable from the transducer to Channel One on the back of the HCM-5080 Controller. (Photo #14).

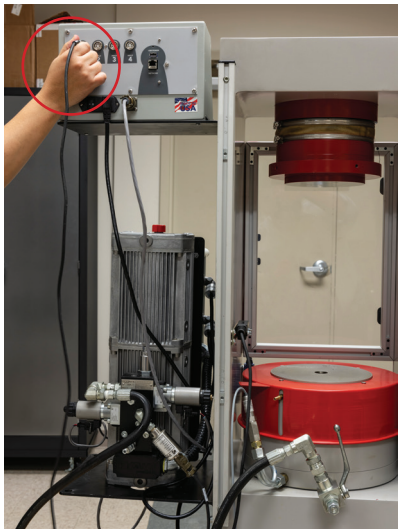

Photo #14— connecting the transducer cable to Channel One of the HCM-5080.

13. Connect the AC power cable from the pump controller to an AC outlet (Photo #15).

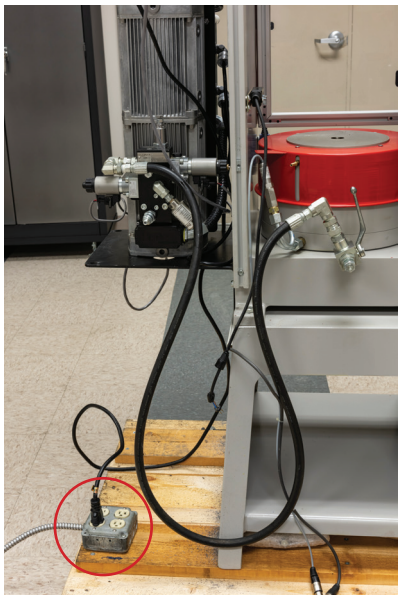

Photo #15— Connecting AC power cable to AC power outlet.

14. Prior to testing, be sure to calibrate the machine by a certified service to ensure accuracy (Photo #16).

Photo #16— Connecting AC power cable to AC power outlet.

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