



# **MechanoCulture TX**

## **Mechanical Stimulation System**

***User Manual***  
***Version 1.6***



*CellScale is an industry leader in biomaterial and mechanobiology test systems.*

Our mechanical test systems are specifically designed for characterizing the material properties of biomaterials. With integrated features such as image capture and analysis, media chambers, and a range of gripping mechanisms, our biaxial and micro-scale compression test systems are capable of generating high quality test data from day one.

Our mechanobiology technologies help advance research by providing insights into the response of cells to mechanical stimulation. CellScale has systems optimized for high-throughput, real-time imaging, and 3D scaffold use. In addition to our standard products, CellScale can also develop a custom solution for your application.

Our products are used by researchers around the globe to study everything from tissue strength and stiffness to cellular response. Please visit our website for more information and a list of publications. Also, please contact us to find out how our test systems can help you.

© 2021 CellScale. All rights reserved. This material may not be reproduced, displayed, modified, or distributed without the express prior written permission of the copyright holder. For permission, contact CellScale Biomaterials Testing at [info@cellscale.com](mailto:info@cellscale.com).



Sales and Support  
CellScale Biomaterials Testing  
11 – 564 Weber St. N.  
Waterloo, Ontario, Canada N2L 5C6  
Phone: 519.342.6870

# Table of Contents

1. General Information .....	1
Environmental and Electrical Specifications .....	1
System Assembly .....	1
Connections to Supply .....	1
Safety Warnings .....	1
General Maintenance .....	1
2. MechanoCulture TX Components .....	2
3. Testing Terminology .....	3
Multiphase Test Cycles .....	3
Phases, Cycles, and Test Sequences .....	3
Test Phases: The Smallest Unit of Testing .....	4
4. Software Overview .....	5
5. Setting Up and Starting a Test .....	6
Step 1: Specimen Loading .....	6
Step 2: System Setup .....	7
Step 3: Generate a Test Sequence .....	9
Step 4: Running a Test .....	11
Step 5: Accessing Data .....	11
6. Additional Settings .....	14
Load Cell Calibration .....	14
8. Sample Test Sequences .....	15
Example 1: Continuous cycling for fixed duration and then stop .....	15
Example 2: Multiple Sets (Smaller Data Files) .....	16
9. Troubleshooting .....	18
10. Appendix A: Updating the Firmware .....	19
11. Appendix B: Replacing Peristaltic Pump Tubes .....	20
12. Appendix C: Software Installation .....	25

# 1. General Information

The MechanoCulture TX is a precision instrument specifically designed for compression testing biomaterials in a sterile fluid environment. This device is capable of uniaxial deformations on flexible cell-seeded substrates or scaffolds. It has a control board to enable it to run independently of a PC in an environment-controlled incubator.

## ***Environmental and Electrical Specifications***

Parameter	Specification
<b>Electrical Input</b>	24 VDC
<b>Current Rating</b>	2.71 A
<b>Environmental Conditions</b>	Maximum Operating Temperature 40 °C 0 – 100% Relative Humidity
<b>Installation Category</b>	Category II
<b>Pollution Degree</b>	Degree 2
<b>Data Connections</b>	USB-B for programming, Micro SD for data storage

## ***System Assembly***

The MechanoCulture TX unit requires initial assembly and disassembly/reassembly between uses. See the Device Assembly and Loading Specimens section for detailed instructions.

## ***Connections to Supply***

Connect the power supply into a properly grounded 100-240VAC power source to ensure safe operation. The mains supply voltage fluctuations should not exceed 10% of the nominal supply voltage.

## ***Safety Warnings***

This equipment must be used in accordance with the procedures outlined in this manual to prevent injury and/or damage.

The unit should not be operated without the top cover in place.

## ***General Maintenance***

The main device does not require maintenance other than cleaning. Please see the components overview section for cleaning and sterilization/disinfection details. The peristaltic pump requires you to change the section of tubing inside the pump head after approximately 50hrs of accumulated operation, how to do this can be found in Appendix B.

## 2. MechanoCulture TX Components

The MechanoCulture TX consists of a cell culture assembly and a control box housing the actuators and force measuring load cells. As shown in the following table, the cell culture assembly consists of a well plate, O-ring, and membrane. The control box contains the master controller, the linear actuators, load cells and plungers.

Component	Description
<b>Well Plate</b>	The well plate contains 6 wells. The well plate is made from polycarbonate and can be sterilized using an autoclave.
<b>1 Large O-Ring</b>	Placed in the groove surrounding all the wells to completely seal the sterile culture area from the plungers that apply the forces to the specimens.
<b>Plungers</b>	A plunger is attached to the end of each load cell and is used to compress the specimens in the wells. These are made from Delrin.
<b>Flexible Membrane</b>	Covers and seals the culture area from plungers. When the force is applied, the membrane will deform and compress the specimens.
<b>Control Box</b>	The top control box houses all of the linear actuators which apply the force and the load cells which measure the force applied as well as the electronics to control these items independent of a computer. The control box has inputs for the power supply and USB to program and read data.
<b>M5/M6 Fasteners</b>	Used to secure the Control Box to the Well Plate
<b>Peristaltic Pump</b>	This system is liquid cooled using a reservoir of approximately 10L of room temperature water and the peristaltic pump. The tubing in this pump must be changed after every 50 hours of accumulated use to prevent hose failure and leaks. Detailed instructions on how to change the tubing can be found in Appendix B.

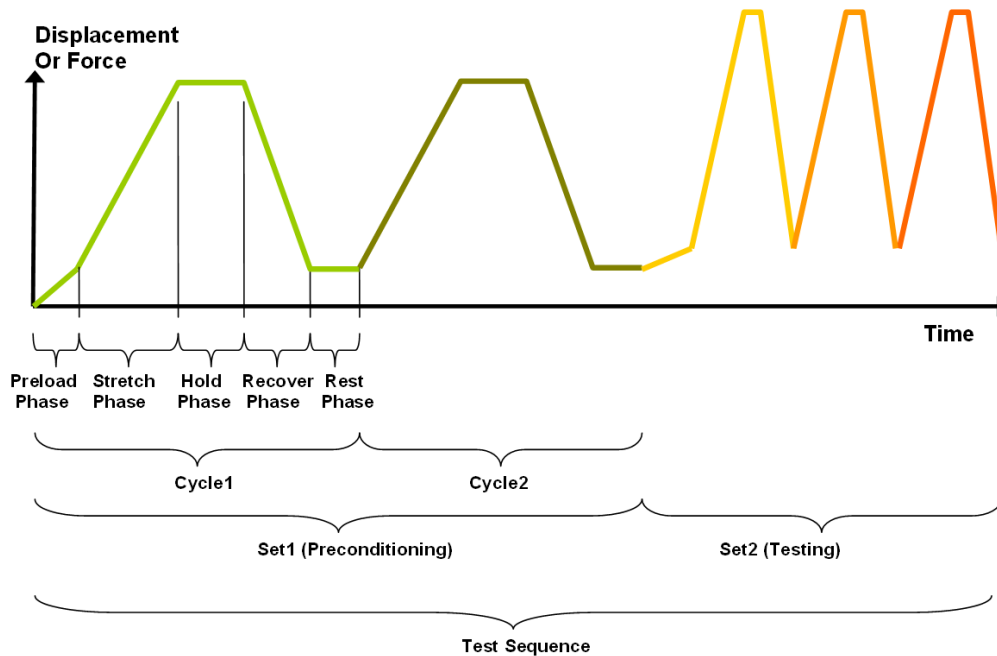
### 3. Testing Terminology

#### ***Multiphase Test Cycles***

To properly mechanically stimulate/signals cells, it is often necessary to apply more than one load magnitude or frequency during the test.

#### ***Phases, Cycles, and Test Sequences***

As the following diagram demonstrates, each application and release of the specimen is called a **test cycle**. The same test cycle can be repeated multiple times to achieve a certain goal. This is called a **test set**. Finally, a **test sequence** is made up of multiple test sets.



The above example describes the following:

- The entire diagram presents a full *test sequence*.
- Within that sequence, there are two *test sets*: the first set applies preconditioning to the specimen; the second set executes the actual test on the specimen.
- Within the first set (preconditioning), two identical *test cycles* are implemented to bring the sample to a satisfactory in vivo state.
- Finally, the second set (testing) is made up of three cycles.

## Test Phases: The Smallest Unit of Testing

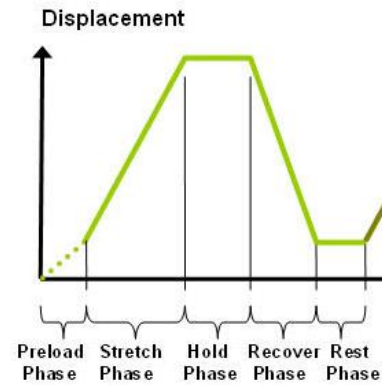
The test phase is the smallest unit of the test specification. There are four phases within a cycle. Each phase serves a specific purpose:

**Compressing** - During the Compress phase, a deformation is applied to the specimen.

**Holding** - The deformation can be held for a given duration.

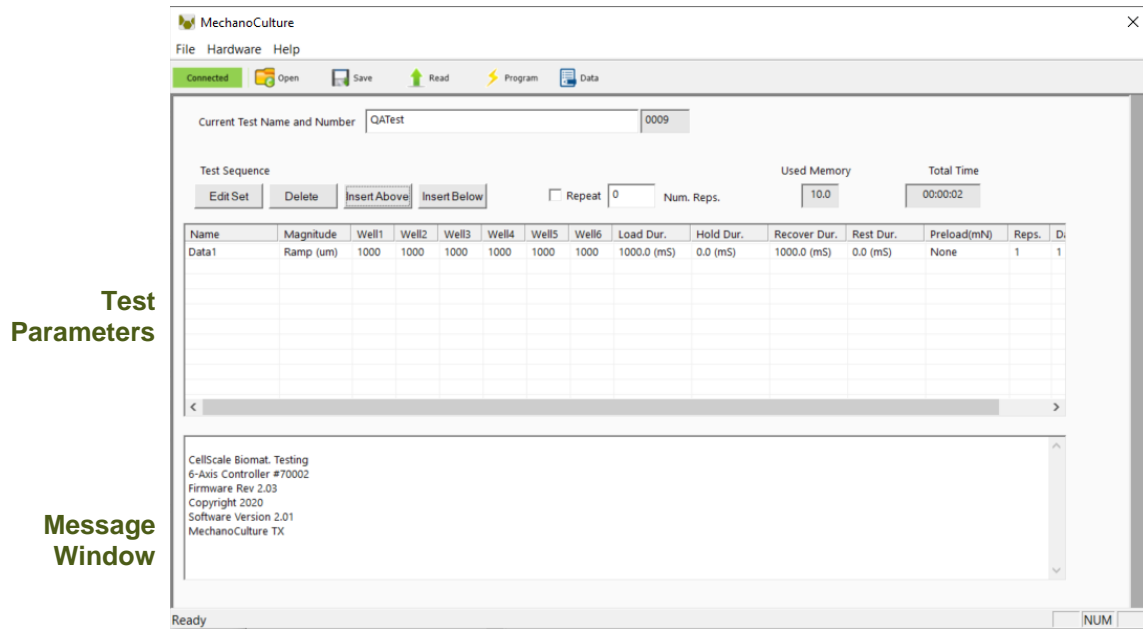
**Recovering** - The recovery phase is the time during which the deformation imposed during the compress phase is removed.

**Resting** - Finally, the rest phase is the time between the end of one cycle and the beginning of the next.



## 4. Software Overview

The MechanoCulture TX software is used to program the device with the phases, cycles, and sets that comprise the test sequence. It is also used to download test data generated with the device. The screen layout is shown below:



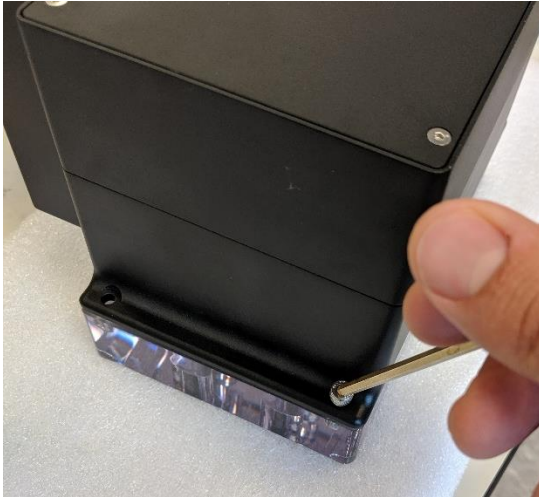
The test parameters section of the main window shows the current testing protocol. Errors and other information are displayed in the message window section.

## 5. Setting Up and Starting a Test

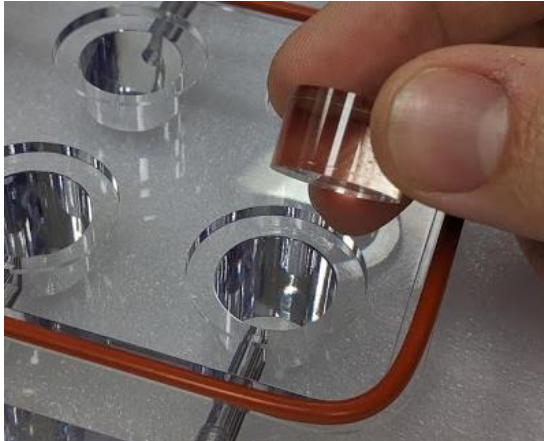
Setting up a test involves loading specimens and generating a test sequence protocol. Data generated during testing can be accessed after the test has completed. Details of this process are described below:

### Step 1: Specimen Loading

#### Disassembly



1. Begin by removing the M5 and M6 fasteners and lifting the control unit off the well plate.

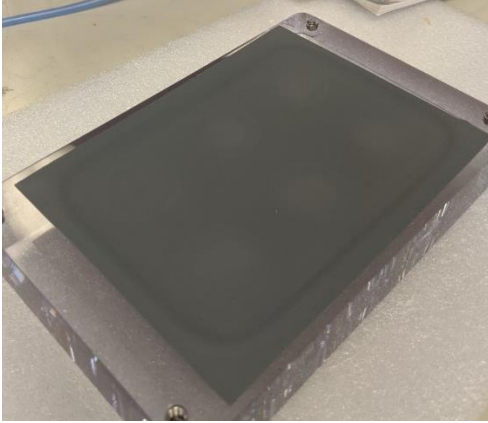


2. Remove the membrane and sterilize the spacers and membrane or well plate if needed. Next insert the spacers provided for your specimens.

**Note:** Due to the compression between the top cover and the specimen holder the membrane may stick to the top cover as it is lifted off. Carefully peel the membrane off the top cover and continue with disassembly.



3. Insert your specimen spacer that corresponds to your sample size into each of the 6 wells, place sample, and then place the hourglass shaped plunger on top. Ensure that they are flush with the top of the well plate. If not, additional spacers or a larger specimen may be required.



4. Once all samples are set into the wells, the membrane is placed overtop to create a barrier between the shuttles and the samples.



5. Next, place the control unit on top and fasten it to the well plate using the M5 and M6 fasteners. The diagram below shows a top view of how the wells are numbered.

## **Step 2: System Setup**

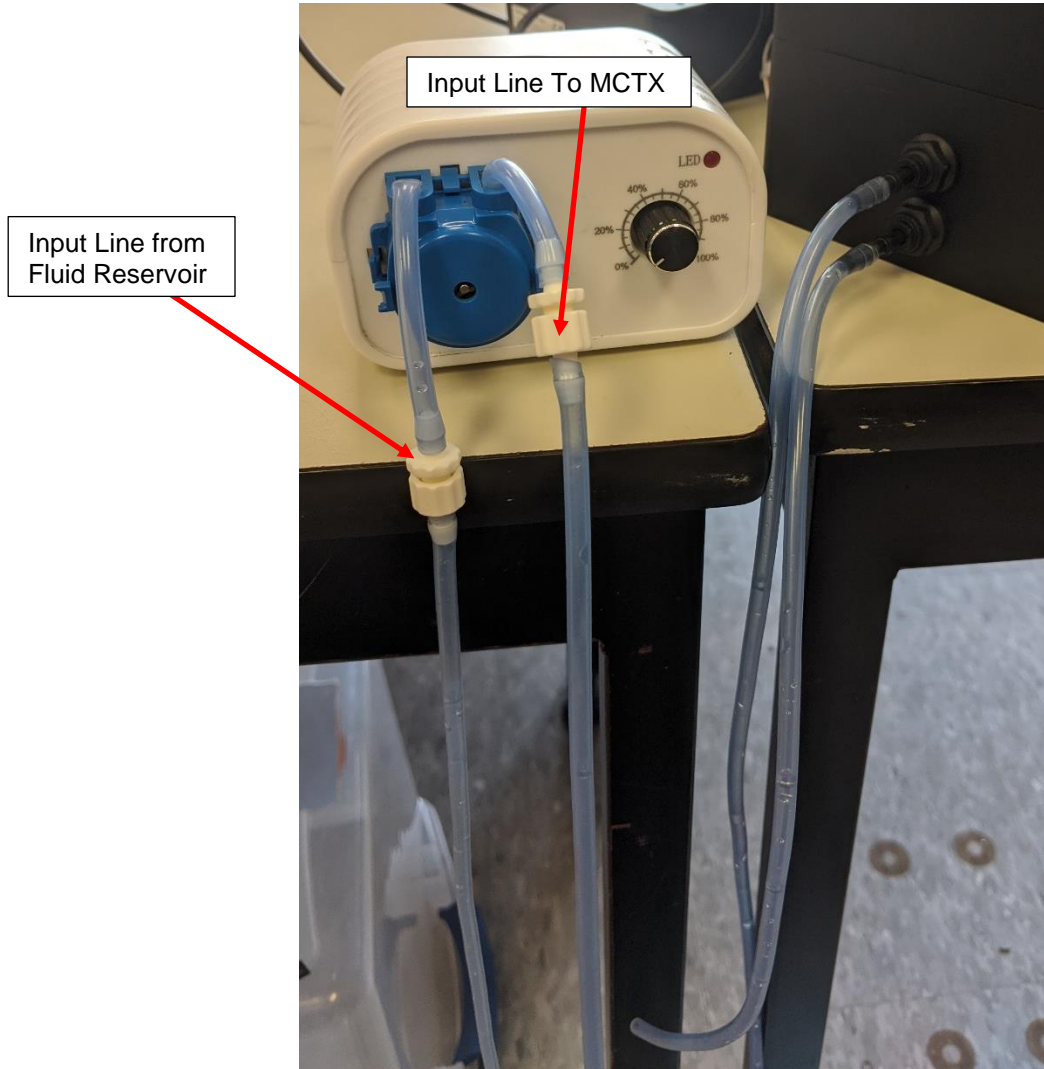
System setup includes connecting all power and data cables (electrical connections) and connecting the peristaltic pump for the liquid cooling.

### **Electrical Connections**

1. Connect the USB cable. This cable connects the system to the host computer. This cable is necessary for programming testing protocols and accessing collected data. It does not need to be connected while running a test.
2. Connect the 24V DC power supply cable. Plug it into an appropriate 100-240VAC power source and the other end into the system

## Fluid Connections

Fluid tubes and a peristaltic pump have been provided to cool the system while it is running. A large reservoir of water will need to be supplied by the user, this will act as a heat sink where the cooling water will flow in and out of and will need to be large enough to stay cool during long tests. The long end coming from the pump must be submerged in the water reservoir, the other end with the black barbed connection must be inserted into either of the fluid ports. The tubing with one free end and one barbed end must be put into the other fluid port and the other end will drain into the water reservoir.



### **MechanoCulture TX Note: Clearing Cooling Lines**

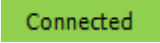
Once you are finished with your test you must clear the cooling tube lines, this is done by running the pump dry. To do this you leave the pump running and remove the feed line from the cooling reservoir and leave the system to pump air through the tubing. It is complete once no water is coming out the outlet line.

**MechanoCulture TX Note: Changing Cooling Lines**

*The rubber hoses in the peristaltic pump head must be changed every 50hrs to prevent leaks. How to change these tubes can be found in Appendix B*

### Step 3: Generate a Test Sequence

Generating a test sequence includes creating or loading a protocol and programming it to the controller.

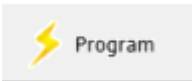
Before generating a test sequence, please launch the MechanoCulture TX Software from the host computer. See Appendix B for more details on Software Installation. The software should show a green “connected” box in the upper left corner  and the hardware and software versions should be listed in the message window.

### Creating or Loading a Test Sequence

Test sequences can be created by pressing the Insert Above or Insert Below buttons to add sets to the test sequence. Each set will have its own row in the table and sets will be executed sequentially. A test sequence can have a maximum of 10 sets.

Alternatively, a predefined test sequence can be opened from a MechanoCulture TX Protocol or Template File (\*.tmt). From the File menu, select Open, or press the Open button on the toolbar.

### Programming a Test Sequence

From the Hardware menu, select Program, or press the Program  button on the toolbar. To program a MechanoCulture TX device it must be connected to the computer’s USB port and connected to power.

To view the test sequence that is currently programmed on the device – select Read from the Hardware menu or press the Read button on the toolbar.

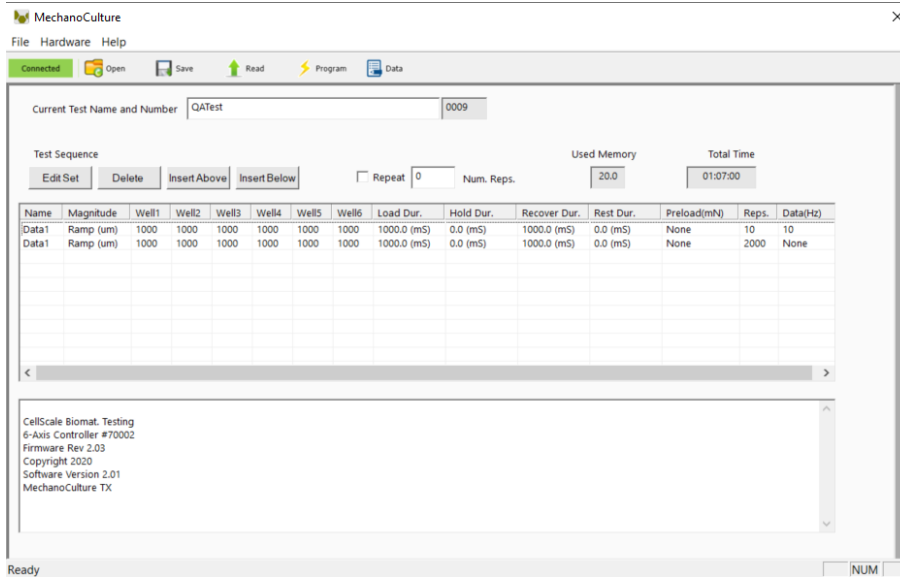


**MechanoCulture TX Note: Maximum Speed**

*The Maximum speed of the system is 6mm/s, programming a protocol with a speed faster than this will result in an error message. For example: 2mm at 1.5Hz or 1.5mm at 2Hz or 300um at 10Hz is possible but 2mm at 2Hz will not be achieved.*

**MechanoCulture TX Note: Long Tests**

*The MecahnoCulture TX is capable of running extremely long tests, however the data collection should not be used for the entirety of the test. A good way to avoid large data files is to run a test with 2 lines, the first line will be a short test and collect data, the second line will be a longer cycle with no data collection. The example below has 1 line of 10 cycles collecting data followed by the same testing protocol for 2000 cycles collecting no data: If you encounter a large data file the Micro-SD card can be removed and plugged directly into the PC for faster downloading.*



## Modify Testing Parameters

You can select and modify parameter sets by clicking on a row in the Test Parameter Specification table and then pressing the Edit Set button (or by double clicking on the row). When you do so, the Set Parameter Editor Dialog will appear.

The test parameters editor allows you to choose the Control Mode, the Waveform, The Compress Magnitude, the time for each section of the test, the repetitions, and data frequency.

The following table describes each of the parameters.

The 'Set Parameter Editor' dialog box is shown. It has a title bar with a close button. The 'Set' field is 'Data1' with a note '(Max. 15 char)'. The 'Control Mode' is 'Displacement' and the 'Waveform' is 'Ramp'. There's a checkbox for 'Compress Magnitude (um)' which is unchecked, and a note 'Customize Each Well'. Below this, 'Well1' through 'Well6' are listed. The 'Preload Magnitude (mN)' is '0'. There are three radio buttons: 'Not Applied' (selected), 'Applied on 1st Repetition Only', and 'ReApply on Every Repetition'. The 'Time Units' are 'mSeconds'. The 'Compress Duration' is '1000', 'Hold Duration' is '0', 'Recovery Duration' is '1000', 'Rest Duration' is '0', 'Repetitions' is '10', and 'Data Output Frequency (Hz)' is '10'. At the bottom are 'OK' and 'Cancel' buttons.

Test Parameter	Description
<b>Set Name</b>	User defined name of each set
<b>Compress Magnitude</b>	The compression applied in um. The maximum compression magnitude is set to 2000um, anything greater than this will not be achieved.
<b>Time Units</b>	Time units are applied to the entire set, but different sets can have different time units.
<b>Compress Duration</b>	The time over which the compress phase of a cycle is applied. The total duration of a cycle is the sum of the Compress Hold Recovery and Rest durations. The frequency of a cycle is then the inverse of this total duration.
<b>Hold Duration</b>	Hold Duration is typically set to 0, however it is useful for creep testing.
<b>Recovery Duration</b>	Recovery Duration is typically set to the same value as the Stretch Duration.
<b>Rest Duration</b>	Rest duration is typically set to 0, however a non-zero value may be used to mimic <i>in vivo</i> conditions or for specialized testing.
<b>Repetitions</b>	The number or repetitions of a given test cycle.
<b>Data</b>	The Data menu allows the user to select how much data is recorded by the device. The options are in Hz, from 0 to 100Hz. The greater the data frequency the larger the data file will be and the longer it will take to download at the end of the test.

## Step 4: Running a Test

Once the device is assembled with specimens and a test sequence is programmed using the MechanoCulture TX software, the device can be unplugged from the host computer.

### Controller Push Button

There is one push-button switch on the front of the control unit. A single push will begin the initialization zeroing sequence, once this is complete a green flashing light can be seen. Pushing the button once this sequence is complete will begin the test, a solid green light can be seen when the system is operating. Pushing the button during a test will pause, a paused test can be restarted with another single push. A force-controlled test will be paused after the current test sequence is completed; a displacement-controlled test will pause in place. Once the test is complete the green LED will flash and when another test is ready to be run simply press the button and a zeroing sequence will run again and a second press once that is complete will begin a new test.

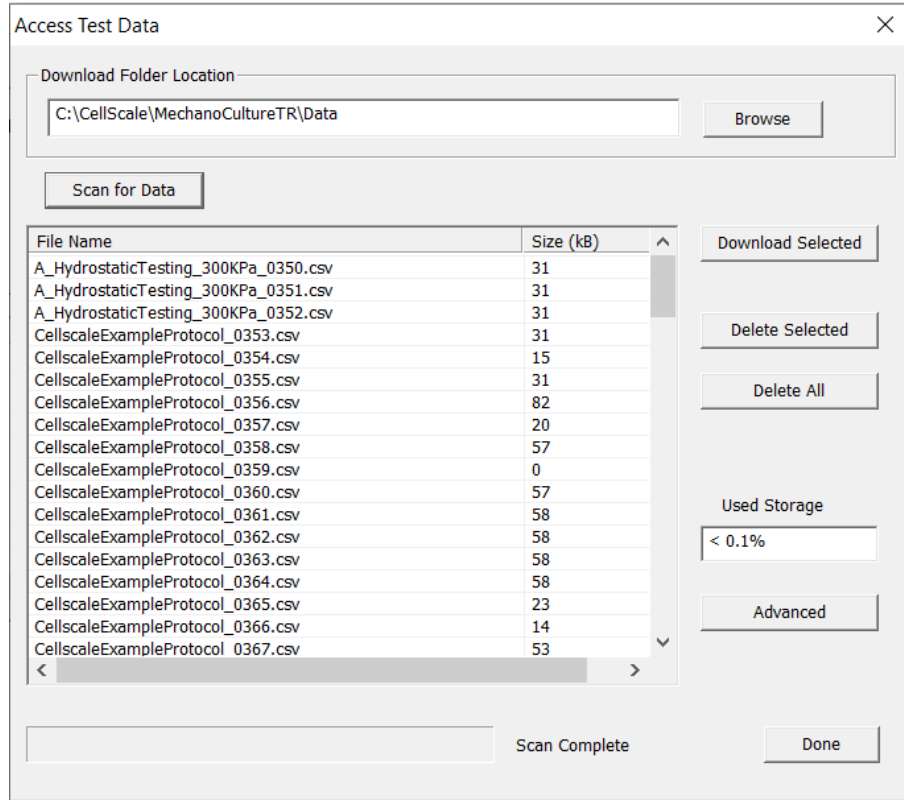
## Step 5: Accessing Data

Data collected during a test protocol is saved directly onto the device and can be accessed from the MechanoCulture TX software by selecting *Access Test Data* from the hardware menu or by clicking the *Data* button in the top right corner.



The Access Test Data menu will appear. Select 'Scan for Data' to scan the SD card and display the data files stored on the device. Files can be selected and downloaded to the PC by first selecting a destination folder using the *Browse* button then selecting the data files of interest and downloading them using the *Download Selected* option.

Unwanted data can be cleared off of the onboard memory by simply selecting the desired files and using the *Delete Selected* button,

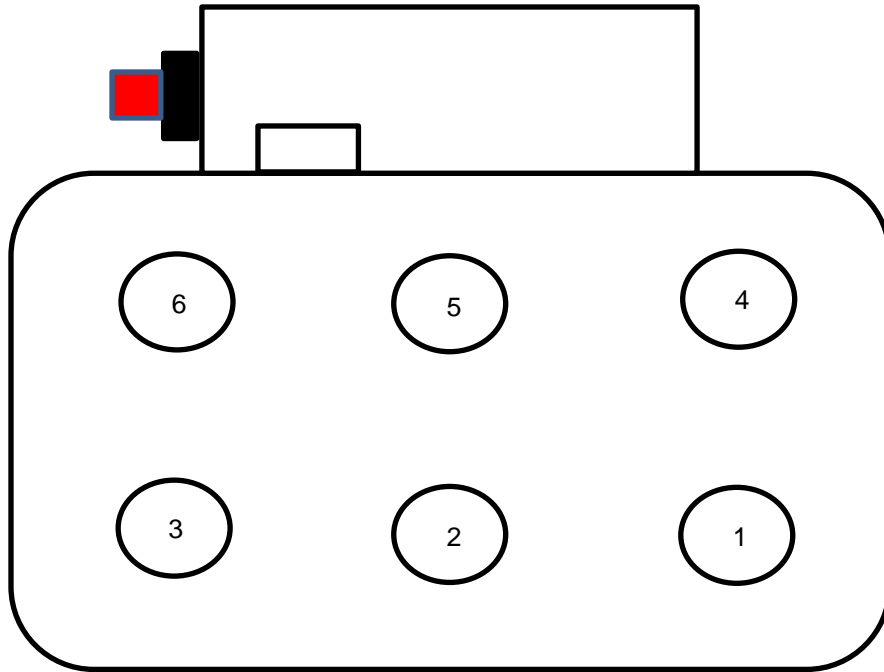


Files that are downloaded will be appear as a .csv data file in the specified download folder location.

The 'Advanced' option is reserved for the rare case in which you have removed the device's SD card, moved raw test data from the card to the computer, and would now like to download and process that data from the computer. Select 'Advanced', check the checkbox after reading the message, and select the computer directory storing the raw test data files. These files will then appear in the list.

## Csv data file

The .csv (comma separated value) data file contains the collected test data. The output contains information about timing, cycles, as well as position and force information for every well. Well numbering is shown in the following Figure of the top view of the device:



Stress information can be calculated from the force data if specimen cross sectional areas are known. Strain information can be calculated from the position data if specimen heights are known.

### **.Tmt Protocol file**

The .tmt protocol file contains the protocol and settings that were used during that test and can be opened like any other template file.

### **Csv \_Raw data file (contained in TestLogs sub folder)**

The raw data file contains data in raw sensor units and is normally not used or viewed with the exception of troubleshooting or debugging.

### **Csv \_Full data file (contained in TestLogs sub folder)**

The full data file contains additional output columns such as specified pressure and actual pressure and is normally not used or viewed with the exception of troubleshooting or debugging.

## 6. Additional Settings

### *Load Cell Calibration*

Calibrating the load cells is done at the factory and does not need to be redone unless the load cell has been overloaded or the user suspects one of the load cells may be broken. To access the calibration dialogue window, select the Hardware drop down menu and select Load Cell Calibration. It will open the below window:

Load Cell Calibration
×

1. Home Motors

Home

1. Select Load Cell

a. 1

▼

b. Move To Position
c. Enter FullScale Load (N) 100

2. Apply Weights

a. Enter Weight (g) 0
b. Read Load Cell Read

For best results  
Apply at least 2 different weights  
Covering most of load cell range

Weight(g)	LoadCell(raw)

Clear

3. Compute

a. Calculate
Gain Factor (N/raw) 0.07606
b. Apply

Save These values to Device

Note: soft limits will not be reset until after power cycle

Done

Each load cell is calibrated individually, before doing the calibration the system must be removed from the clear well plate and flipped upside down.

## 8. Sample Test Sequences

The MechanoCulture TX software allows for complex test sequences to be generated. The examples in this section illustrate how to generate different types of test protocols.

### ***Example 1: Continuous cycling for fixed duration and then stop***

A long test using one protocol may be desired. To do this, first insert a row by pressing the “Insert Above” button. Then double click on that row to modify it.

The below test protocol will compress 1000um in 1000ms and recover 1000um in 1000ms for 100 cycles then stop with data collected at a frequency of 10Hz

Field	Value
Magnitude	1000um
Stretch Duration	1000 ms
Hold Duration	0.0 s
Recover Duration	1000 ms
Rest Duration	0.0 s
Repetitions	100
Data	10Hz

The screenshot shows the MechanoCulture TX software interface. At the top, there is a menu bar with 'File', 'Hardware', and 'Help'. Below the menu bar is a toolbar with icons for 'Connected', 'Open', 'Save', 'Read', 'Program', and 'Data'. The main window displays the 'Current Test Name and Number' as 'Test' and '0009'. Below this, there is a 'Test Sequence' section with buttons for 'Edit Set', 'Delete', 'Insert Above', and 'Insert Below'. A 'Repeat' checkbox is checked, and the 'Num. Reps.' is set to 0. The 'Used Memory' is 10.0 and the 'Total Time' is 00:03:20. A table lists the test sequence parameters:

Name	Magnitude	Well1	Well2	Well3	Well4	Well5	Well6	Load Dur.	Hold Dur.	Recover Dur.	Rest Dur.	Preload(mN)	Reps.	Data(Hz)
Data1	Ramp (um)	1000	1000	1000	1000	1000	1000	1000.0 (mS)	0.0 (mS)	1000.0 (mS)	0.0 (mS)	None	100	10

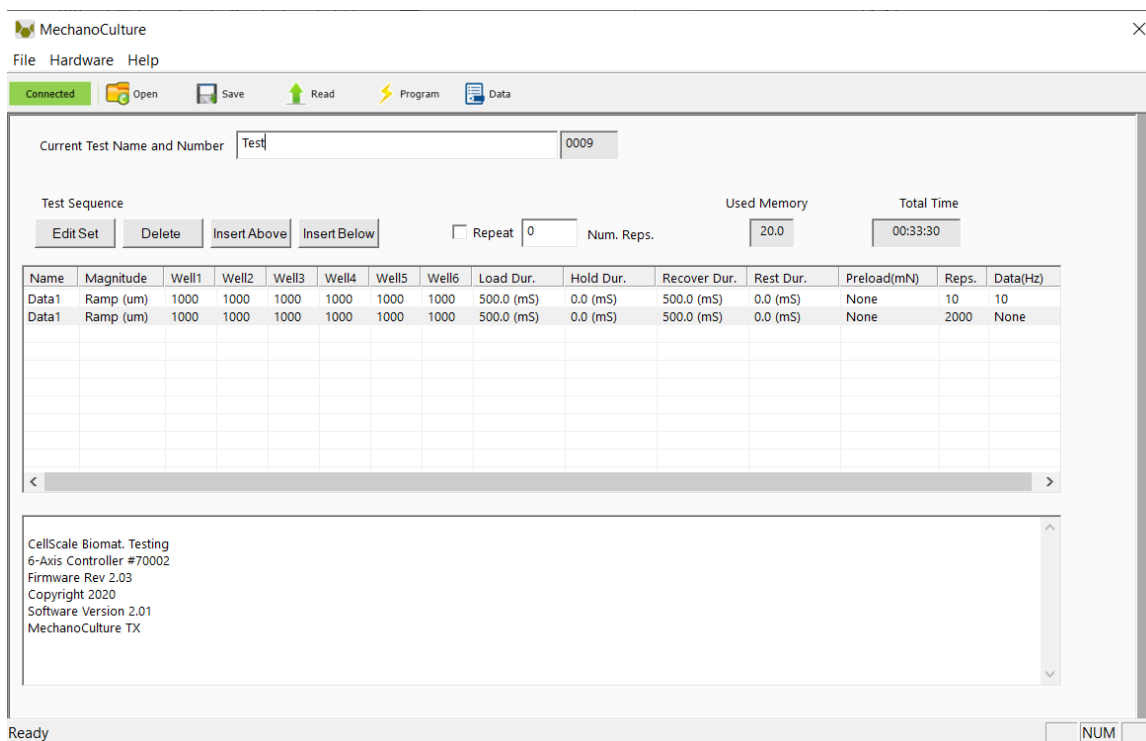
At the bottom of the window, there is a status bar showing 'Ready' and 'NUM'.

### Example 2: Multiple Sets (Smaller Data Files)

A test sequence where the protocol changes during the test may be desired. You may want to test the sample with a smaller compression and then a larger compression.

The following program executes an example test, which includes a 1000um compression for 10 cycles collecting data at 10Hz followed by the same test for 2000 cycles collecting no data.

Field	Precondition Value	Main Value
Magnitude	1000um	1000um
Stretch Duration	500 ms	500 ms
Hold Duration	0 ms	0 ms
Recover Duration	500 ms	500 ms
Rest Duration	0 ms	0 ms
Repetitions	10	2000
Data	10 Hz	None



### Example 3: Unique Well Compression

A test sequence where each well is programmed individually is possible but each well must be running the same test mode.

The following program executes an example test, which includes a 1000um compression for Well 1, a 1100um compression for Well 2, and a 1500um compression for Wells 3-6.

Field	Main Value
Magnitude	1000um, 1100um, 1500um
Stretch Duration	1000 ms
Hold Duration	0 ms
Recover Duration	1000 ms
Rest Duration	0 ms
Repetitions	10
Data	10 Hz

The screenshot displays the MechanoCulture software interface. At the top, there is a menu bar with 'File', 'Hardware', and 'Help'. Below the menu bar is a toolbar with icons for 'Connected', 'Open', 'Save', 'Read', 'Program', and 'Data'. The main window is titled 'Current Test Name and Number' and shows 'Test' and '0009'. Below this, there is a 'Test Sequence' section with buttons for 'Edit Set', 'Delete', 'Insert Above', and 'Insert Below'. To the right of these buttons are fields for 'Repeat' (set to 0), 'Num. Reps.', 'Used Memory' (10.0), and 'Total Time' (00:00:20). The central part of the interface is a table with columns: Name, Magnitude, Well1, Well2, Well3, Well4, Well5, Well6, Load Dur., Hold Dur., Recover Dur., Rest Dur., Preload(mN), Reps., and Data(Hz). The first row, 'Data1', shows a 'Ramp (um)' magnitude with values of 1000, 1100, 1500, 1500, 1500, and 1500 for wells 1 through 6 respectively. The 'Load Dur.' is 1000.0 (mS), 'Hold Dur.' is 0.0 (mS), 'Recover Dur.' is 1000.0 (mS), 'Rest Dur.' is 0.0 (mS), 'Preload(mN)' is None, 'Reps.' is 10, and 'Data(Hz)' is 10. Below the table is a status bar showing 'Ready' and 'NUM'. At the bottom left, there is a text box containing system information: 'CellScale Biomat. Testing', '6-Axis Controller #70002', 'Firmware Rev 2.03', 'Copyright 2020', 'Software Version 2.01', and 'MechanoCulture TX'.

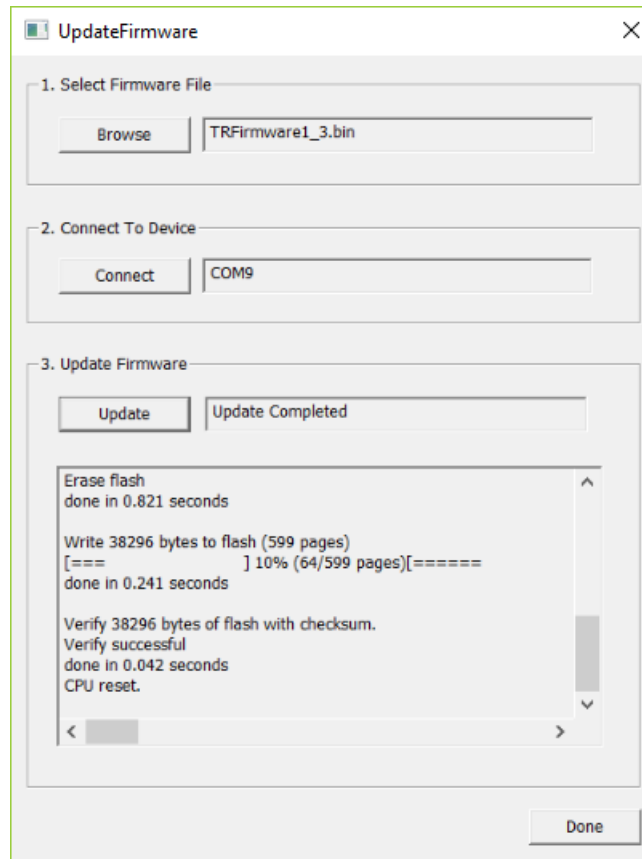
## 9. Troubleshooting

Error	Remedy
Error 6 readfile error Or other errors when connecting to device	Power cycle software and device
Error reading data from device	Close and Re-open the data collection window

LED Error Code	Meaning and remedy
Red LED 2 Pulse	SD Card not present or unable to access, check that Micro-SD card is inserted properly
Red LED 3 Pulse	No Test Programmed, program a new test protocol in software
Red LED 4 Pulse	No Loadcell calibration data detected, ensure loadcell calibration data is correct.
Orange LED 4 Pulse	Soft limit reached during test(displacement or force), test will continue and finish on all wells that did not reach soft limit
Green LED Slow Flash	Device is paused, press button to resume test
Green LED Solid On	Device is currently operating, either homing protocol or test sequence
Green LED Fast Flash	Device has finished running and is ready to proceed with button push to begin test or homing sequence.

## 10. Appendix A: Updating the Firmware

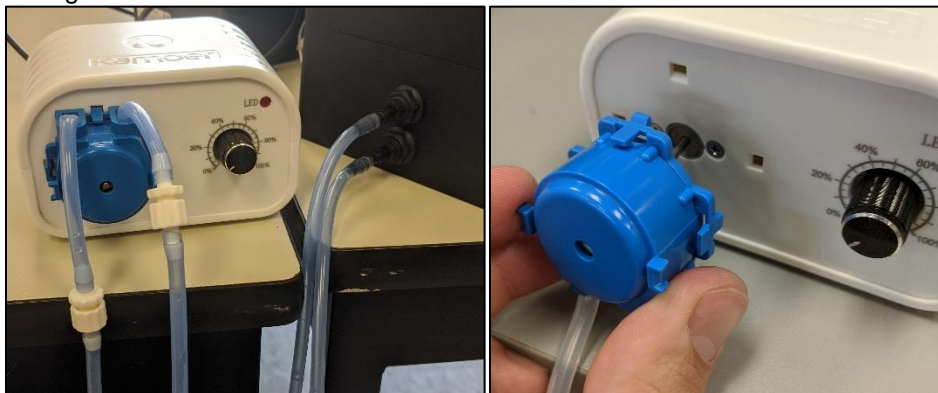
1. With the MechanoCulture TX connected to the PC and turned on, launch the firmware update software located in the Windows start menu under MechanoCulture>Utilities>UpdateFirmware.exe.
2. Load the firmware file (\*.bin) using the “Browse” button.
3. Click the “Connect” button.
4. Execute the update using the “Update” button.



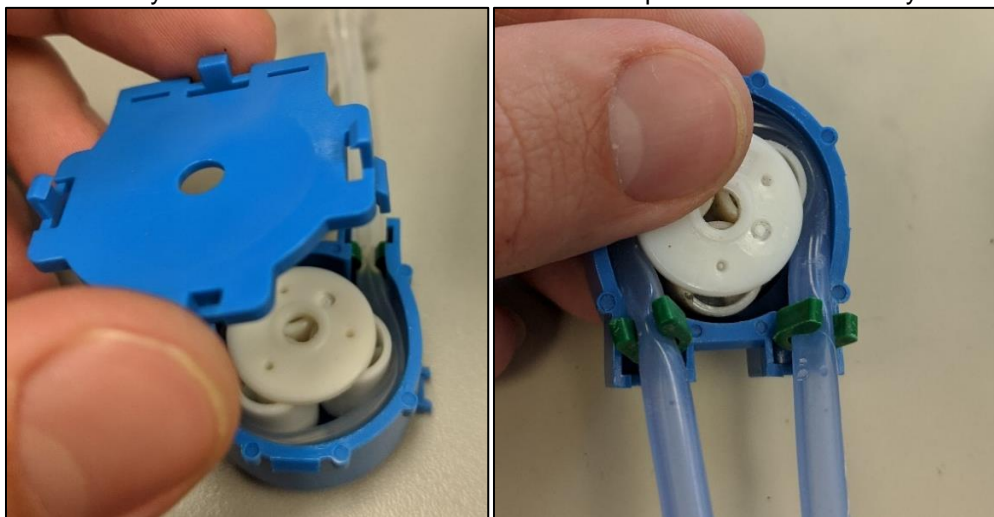
## 11. Appendix B: Replacing Peristaltic Pump Tubes

After approximately 50hrs of operation the peristaltic pump tubing must be changed to avoid a rupture of the line and leakage inside the pump. To replace the tubing follow the instructions below:

1. Remove the tube from the system and the water reservoir and run the pump dry to remove any excess liquid.
2. Now that the tubes are clear of any liquid, remove the long sections of tubing from the pump head by twisting the Luer lock fittings. Now the pump head can be removed from the pump motor. This is removed by pinching in the 2 side clips and pulling it off as seen in the image



3. Once the pump head is removed take the back cover off to expose the rotating cam and tubing. With the back cover off lift the tubing up and out of the green clips which are used to hold it in place. Once the green clips are removed you can lift the cam and tubing out of the assembly. Be careful as the cam is made of loose parts that can roll away.



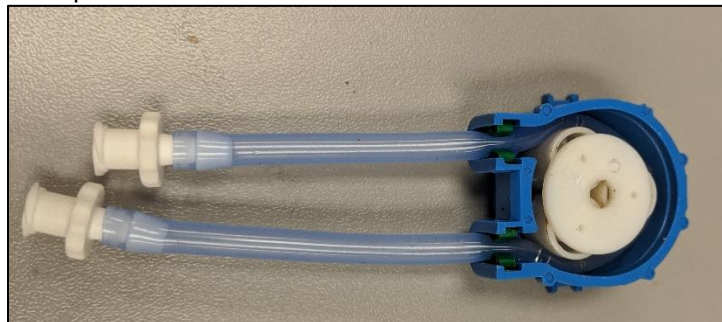
4. With the cam and old tube removed, you can remove the luer lock barbed fittings and place them into the new tube.

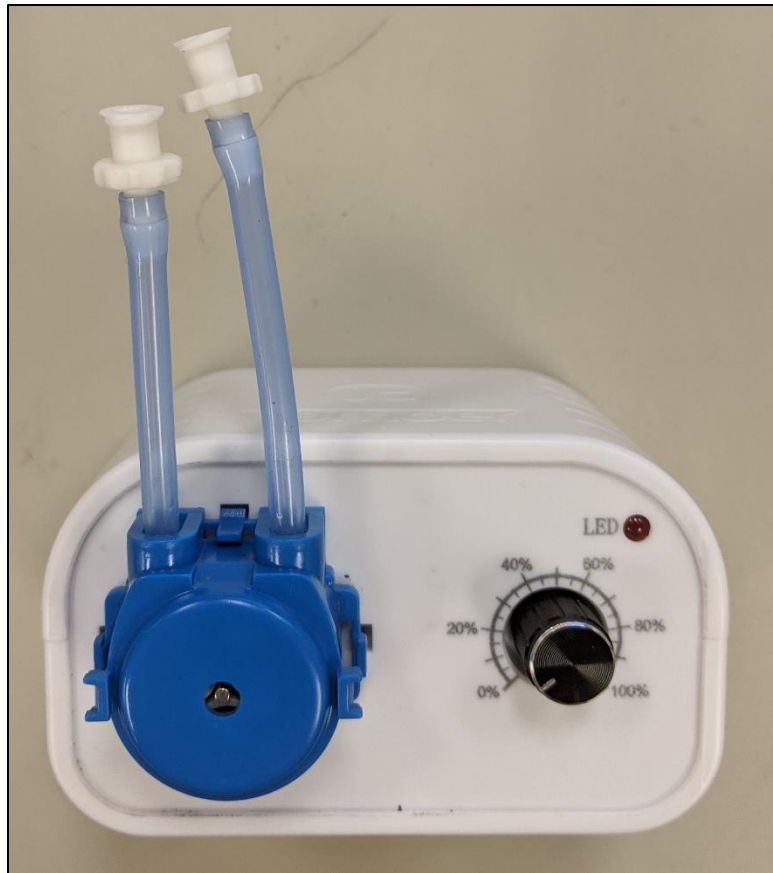
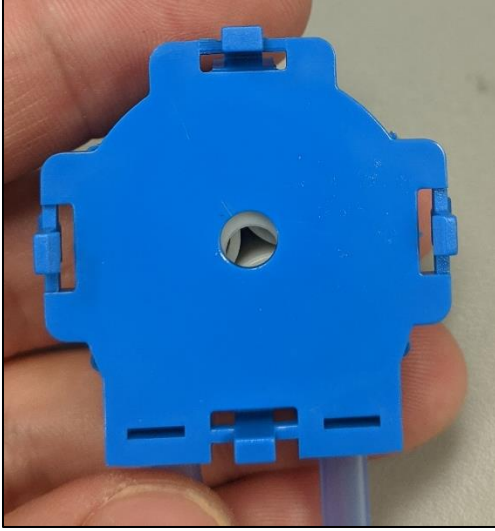


5. Place the green clips back into their slots, wrap the tube around the cams and push it into place in the center of the housing.



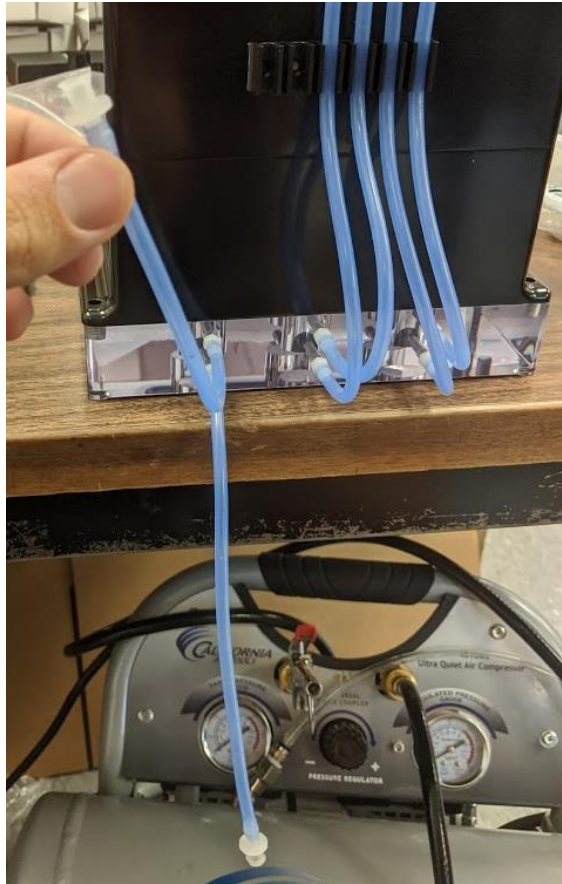
6. Slide the tube into each of the green clips and place the back cap back on and snap the pump head back in place with the new tube.



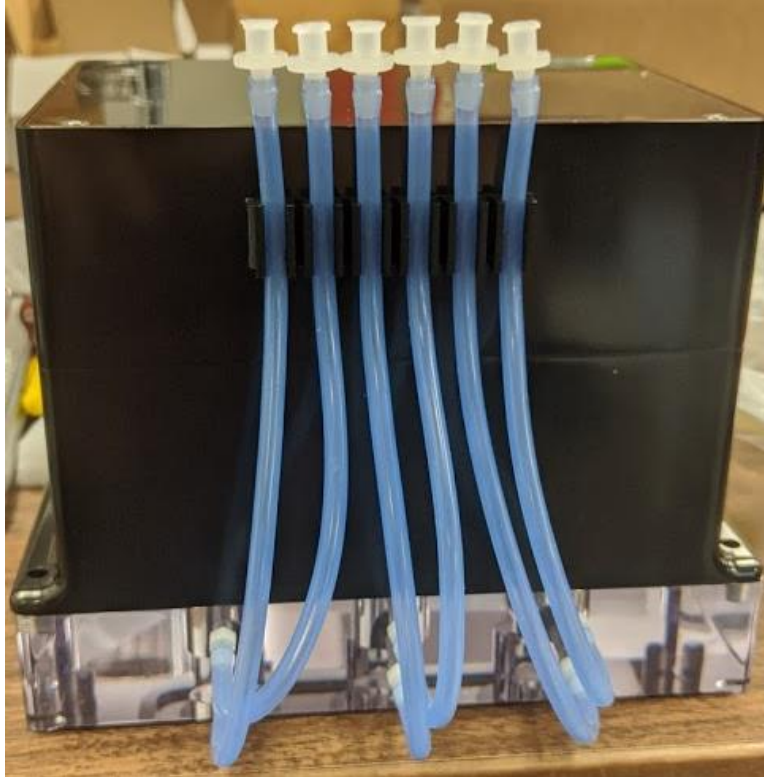


## 12. Appendix C: Fluid Profusion Setup

If your system is set up to do fluid profusion your clear poly carbonate well plate will have 2 ports in each well with a barbed fitting and tubing attached. The top port is for loading new media and the bottom is for removing old media. TO remove old media from the well the plug can be removed from the end of the tube and the tube can be removed from its upright position and released into a basin to catch the media as seen below:



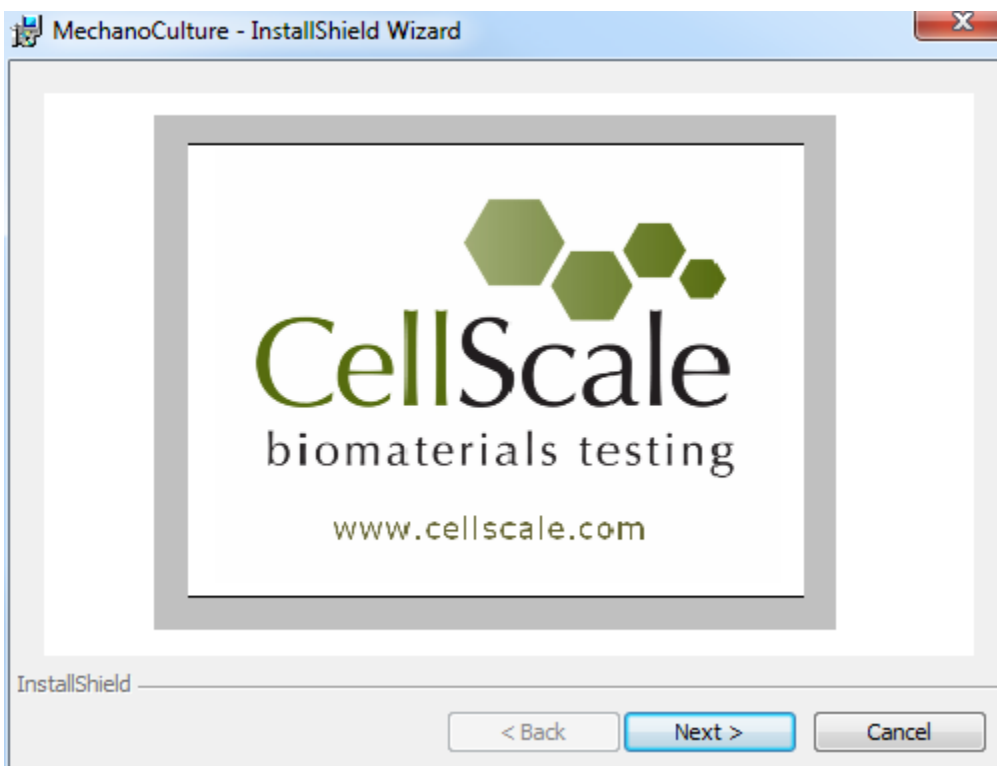
To fill the well with new media the plug for the bottom tube must be replaced and the tube must be placed back into the upright position in its holder. Next a syringe can be attached to the luer lock fitting on the top tube and media may be flowed into the well until the desired amount has been inserted. Once the well is filled the plug can be replaced and the tube can be put back into its upright position. These steps can be repeated for all 6 wells to fill the system, if sterility is not a concern the well plate can be filled before installing the top unit.

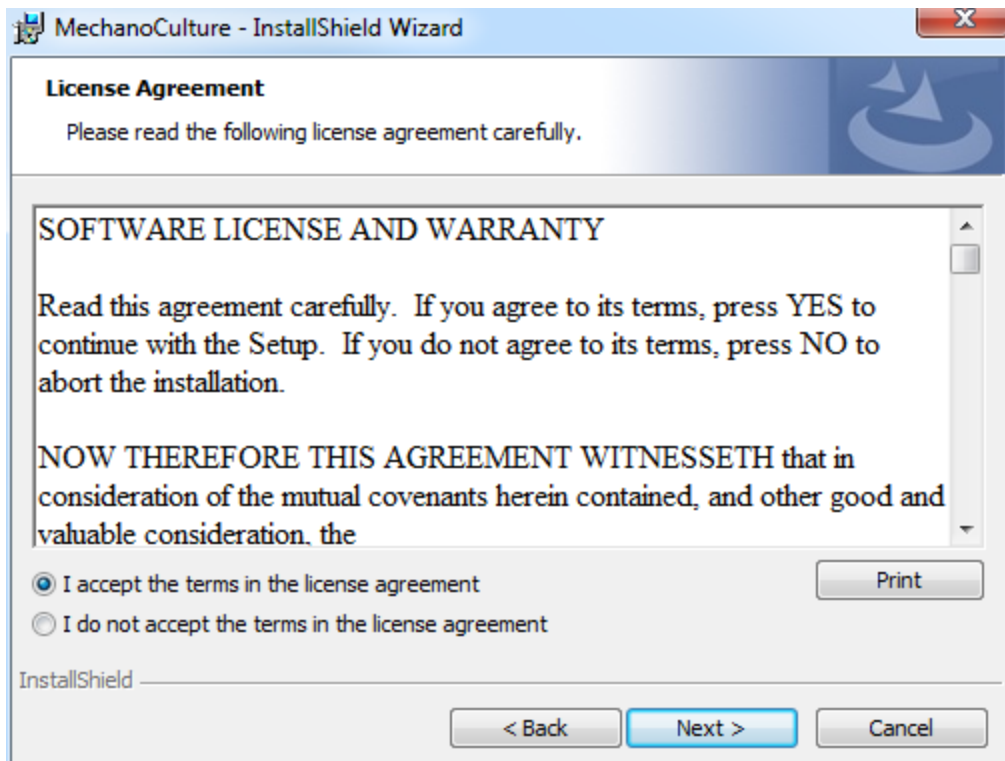
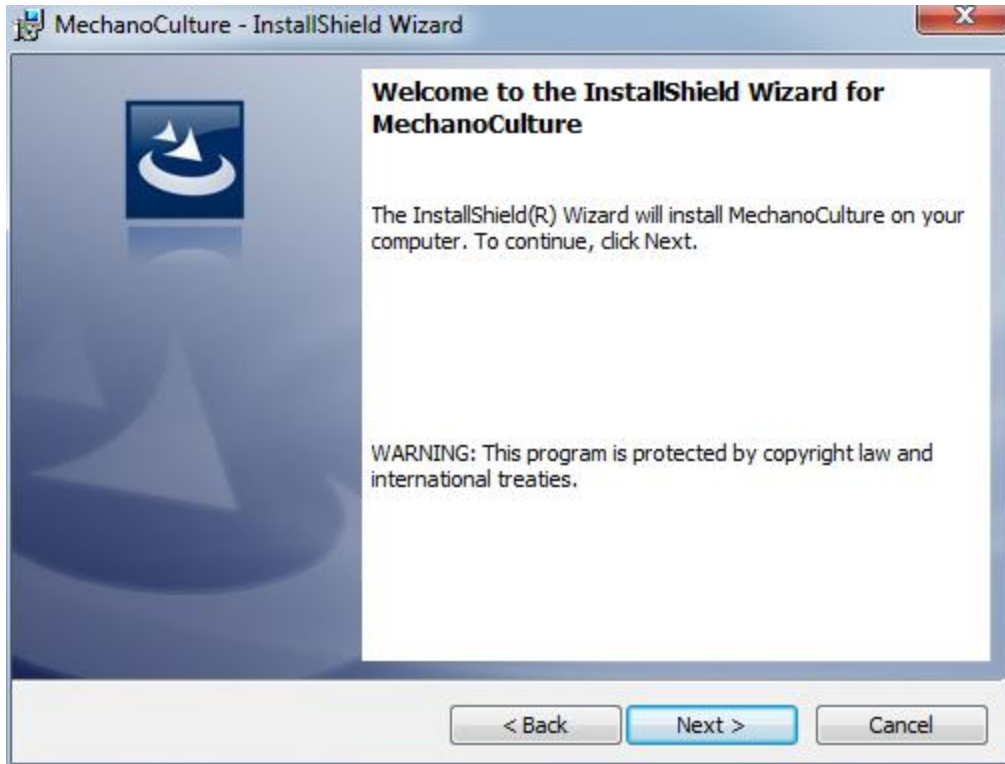


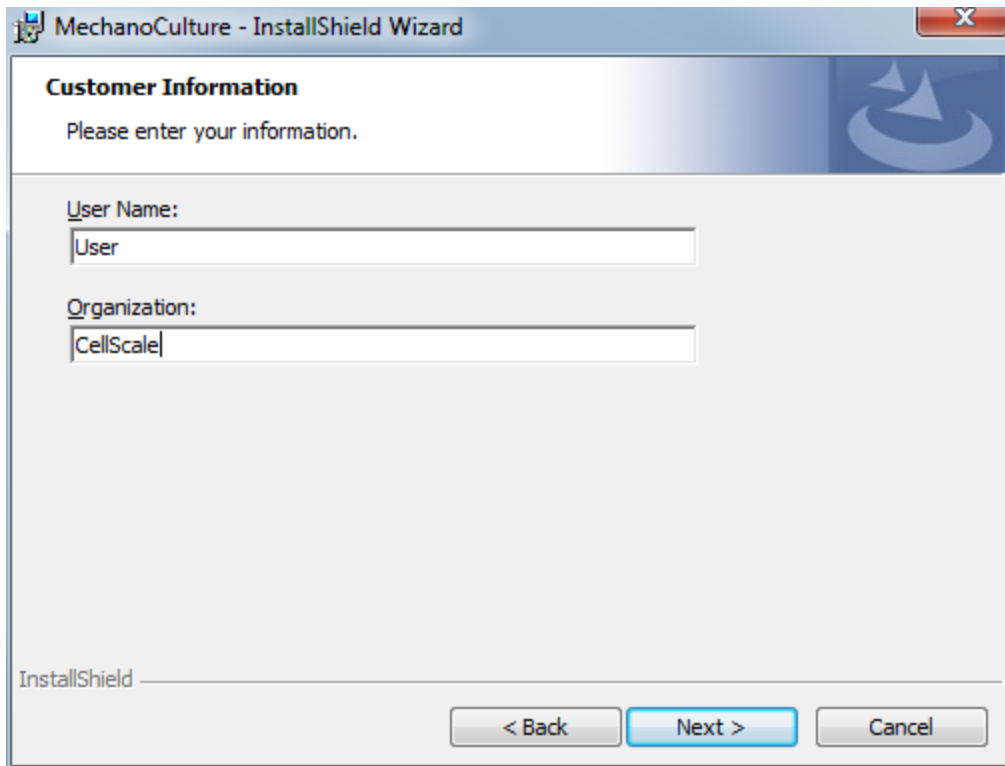
## 13. Appendix D: Software Installation

Included in your shipment is a link to install the MechanoCulture TX software. This installation package contains the installer for the software to program your MechanoCulture TX devices.

To install the software, go to the provided web address and download the compressed installation package. Transfer this file to the computer which will be programming the MechanoCulture TX. Right click on the file and select "Extract All..." to unzip. After this is complete, go to the unzipped installation folder and select "setup.exe". Details of typical dialogue boxes are shown below.







**MechanoCulture - InstallShield Wizard**

**Customer Information**

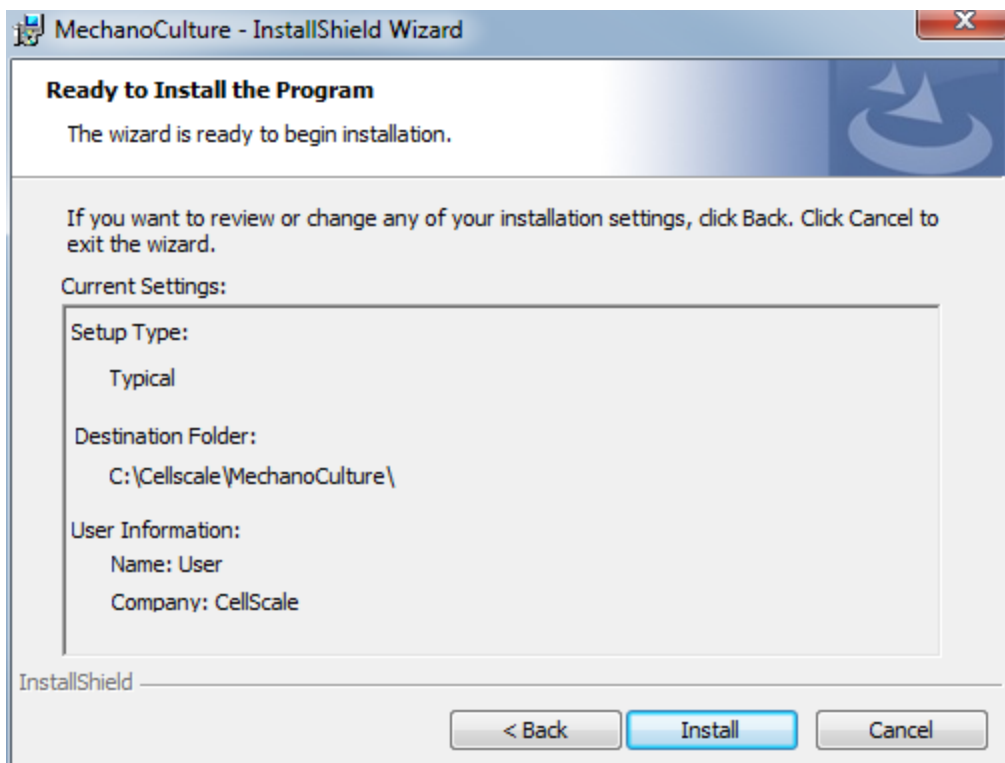
Please enter your information.

User Name:

Organization:

InstallShield

< Back   Next >   Cancel



**MechanoCulture - InstallShield Wizard**

**Ready to Install the Program**

The wizard is ready to begin installation.

If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.

Current Settings:

Setup Type:  
 Typical

Destination Folder:  
 C:\Cellscale\MechanoCulture\

User Information:  
 Name: User  
 Company: CellScale

InstallShield

< Back   Install   Cancel

