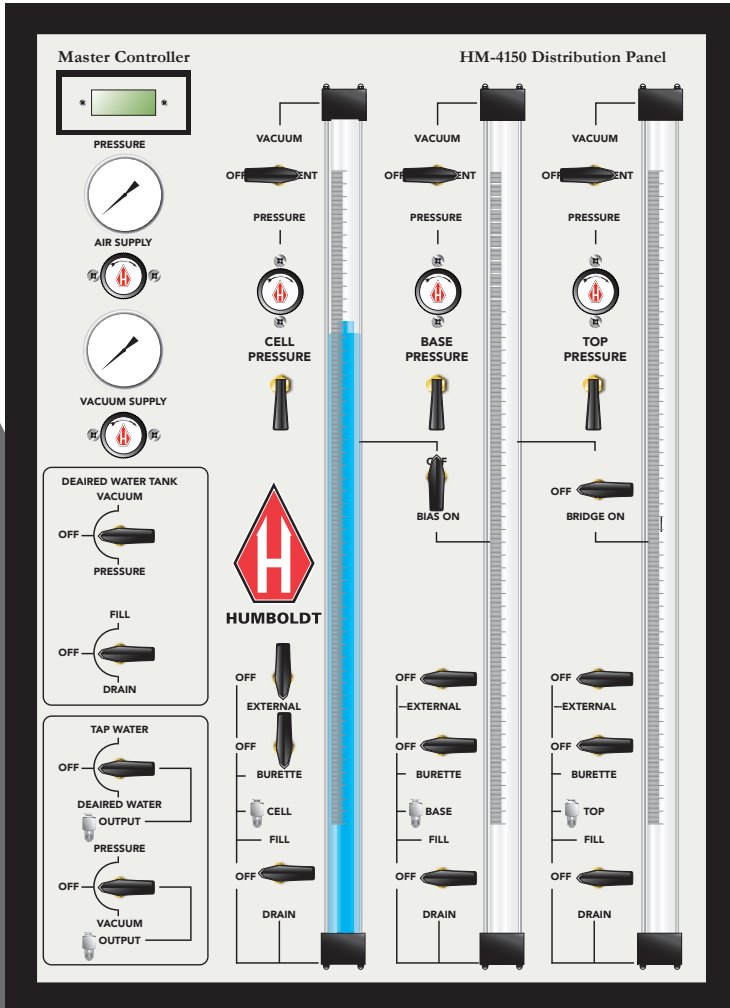


# FlexPanel and Triaxial Cell Setup



# **FlexPanel and Triaxial Cell Setup**

Section One:

**How to Fill FlexPanels..... 4**

Section Two:

**How to Fill the Triaxial Cell Chamber .....13**

Section Three:

**Saturating (De-airing) Drainage Lines.....33**

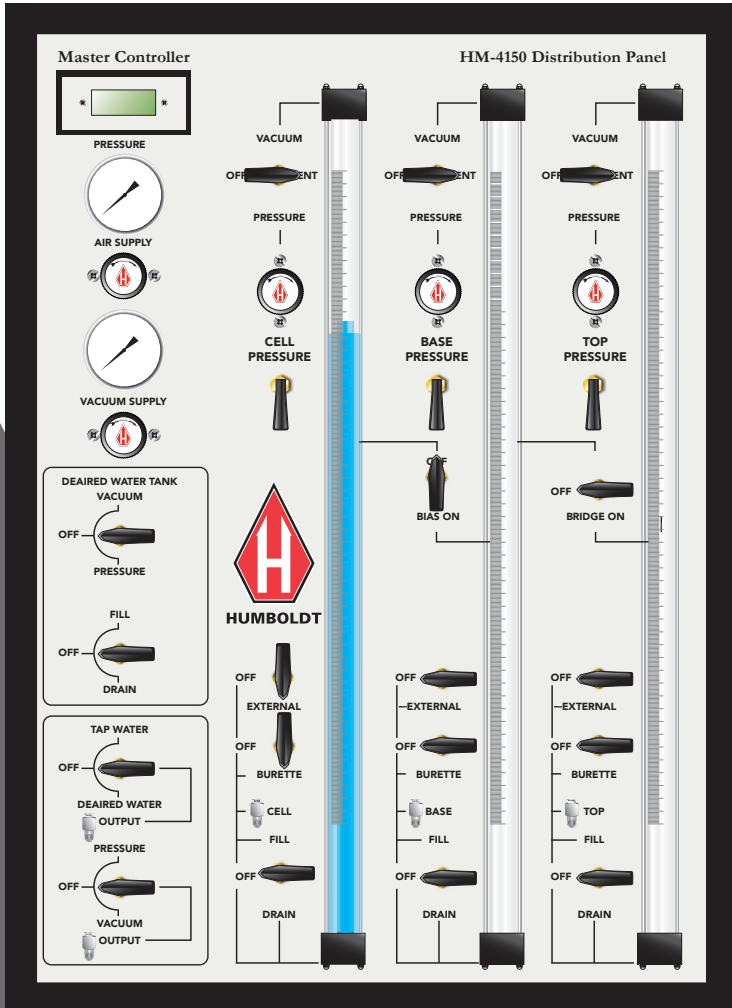
Section Four:

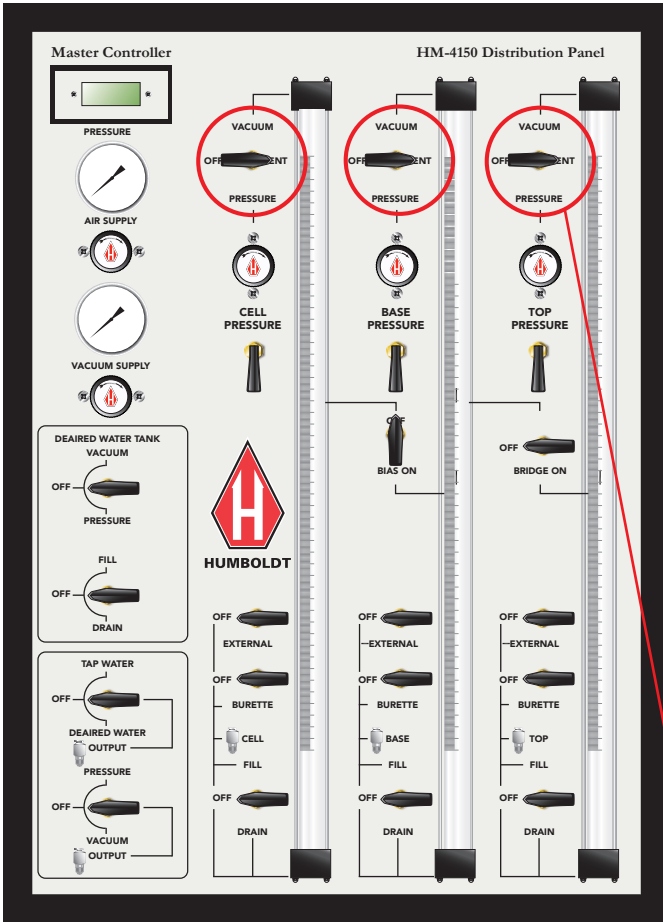
**Saturation and Recording B Values.....43**

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# How to Fill FlexPanels

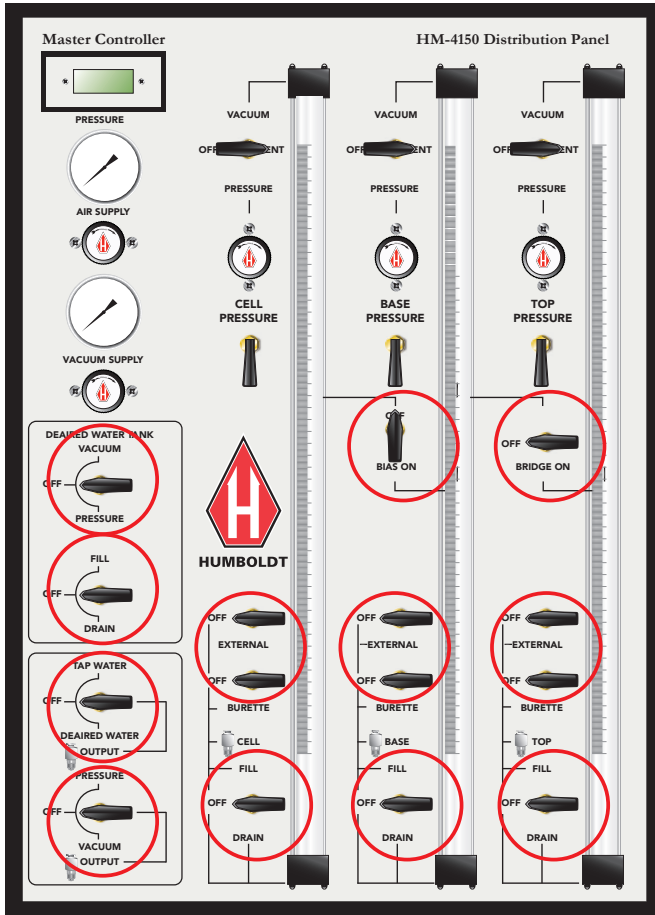




**STEP 1**

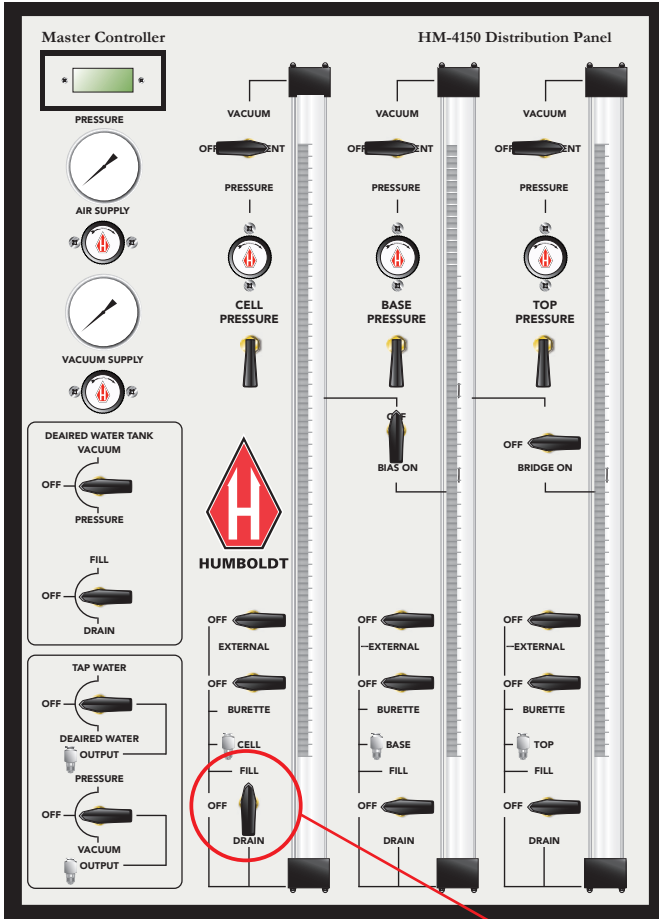
Turn all Pressure Valves to the Vent position.

1



## STEP 2

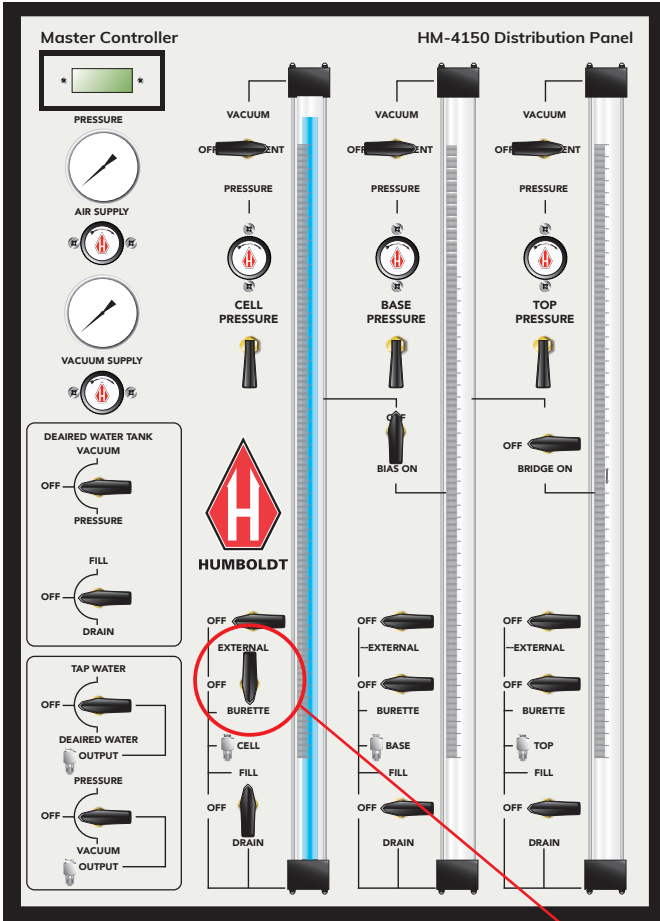
Turn all other Valves to the Off position.



### STEP 3

Turn the Valve Indicator to Fill.

3

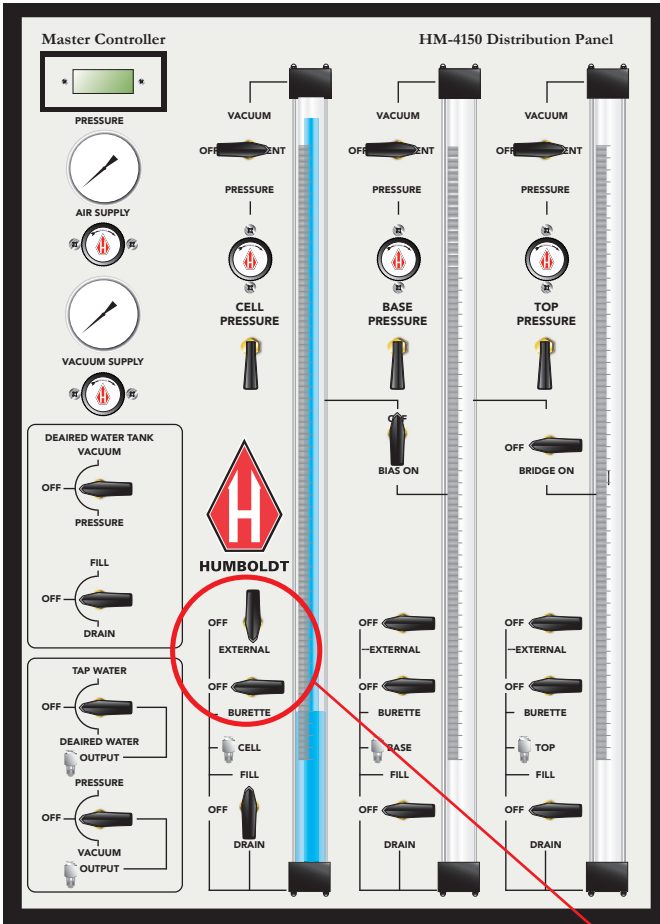


## STEP 4

Turn the Burette Valve Indicator to the Fill position (BURETTE).

4

As the water level approaches the top of the Burette, continue filling the Burette until air bubbles are no longer evident in the Burette.

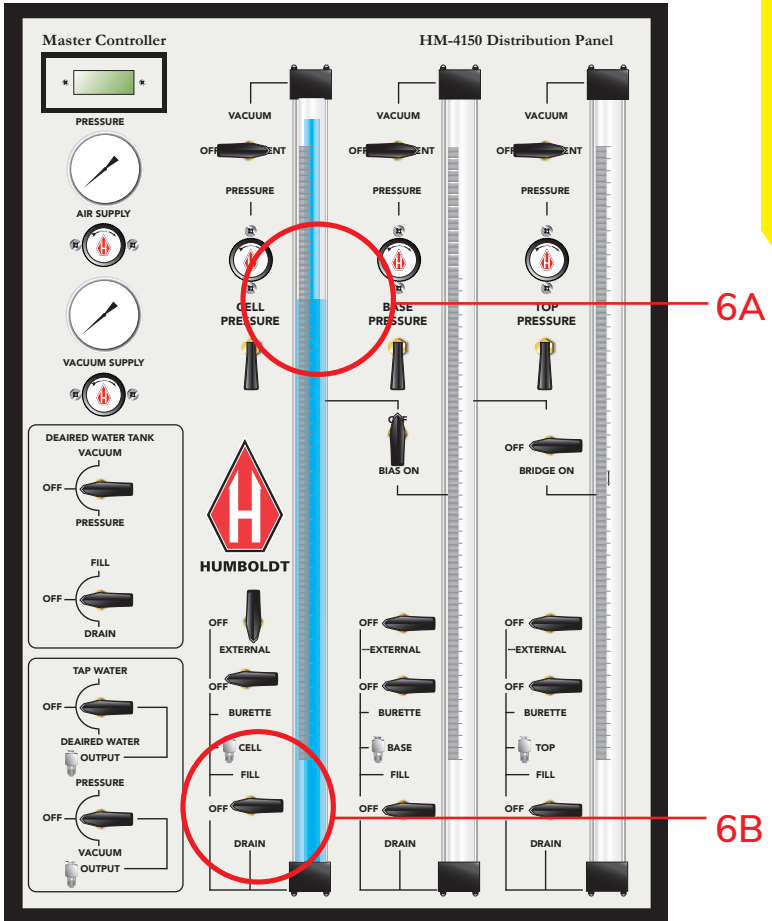


**STEP 5**

Turn the Burette Valve Indicator to the Off position and turn the External Valve Indicator to the On position (External).

5

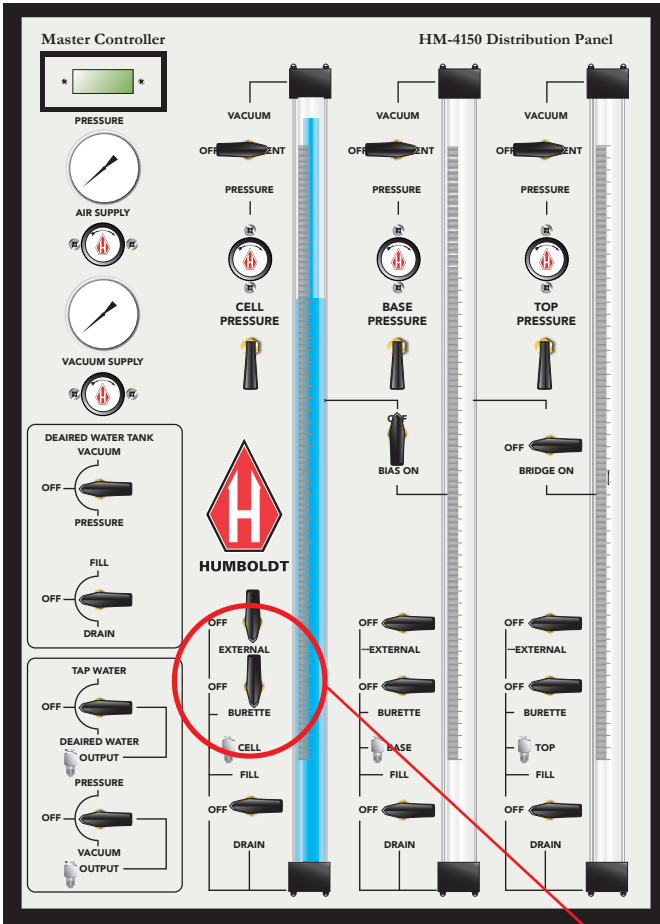




## STEP 6

**A.** Slow the water rate of the External Tube as the water level approaches this level.

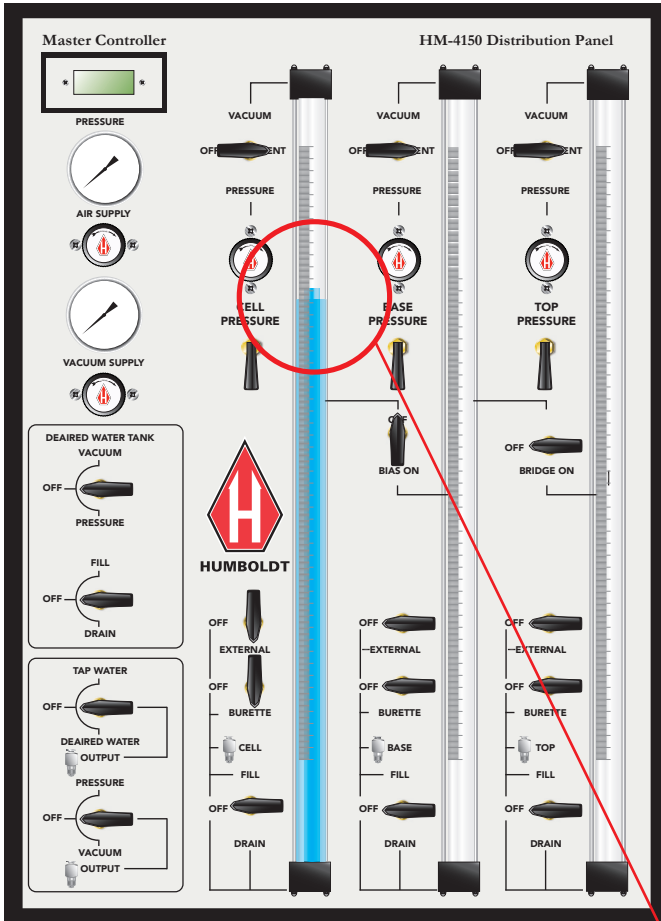
**B.** Then, turn the Fill Valve indicator to OFF position.



**STEP 7**

Turn the Burette Valve Indicator to the Burette Position.

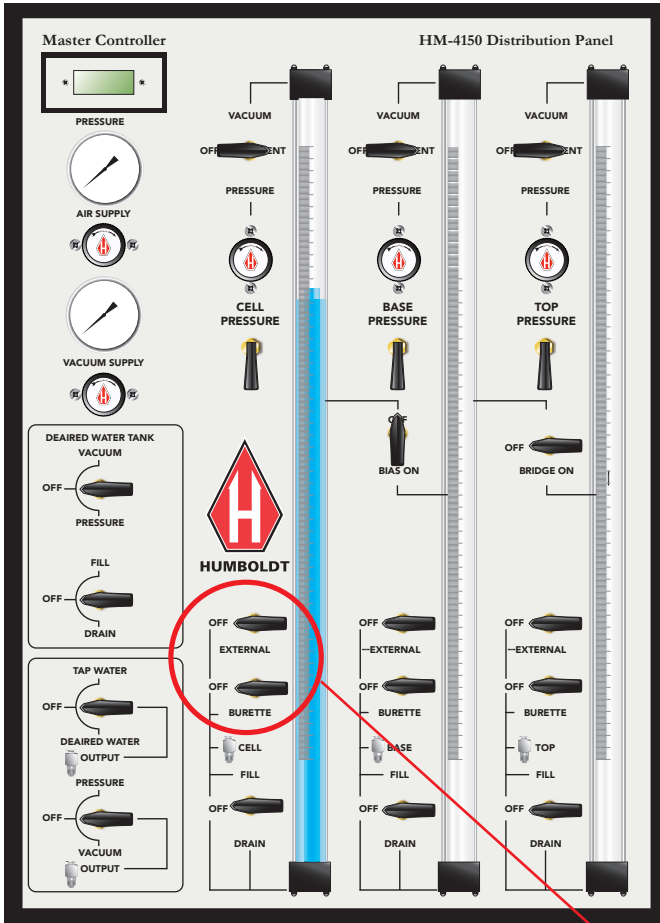
7



**STEP 8**

The water level in the Burette will adjust to the water level in the External Tube.

8



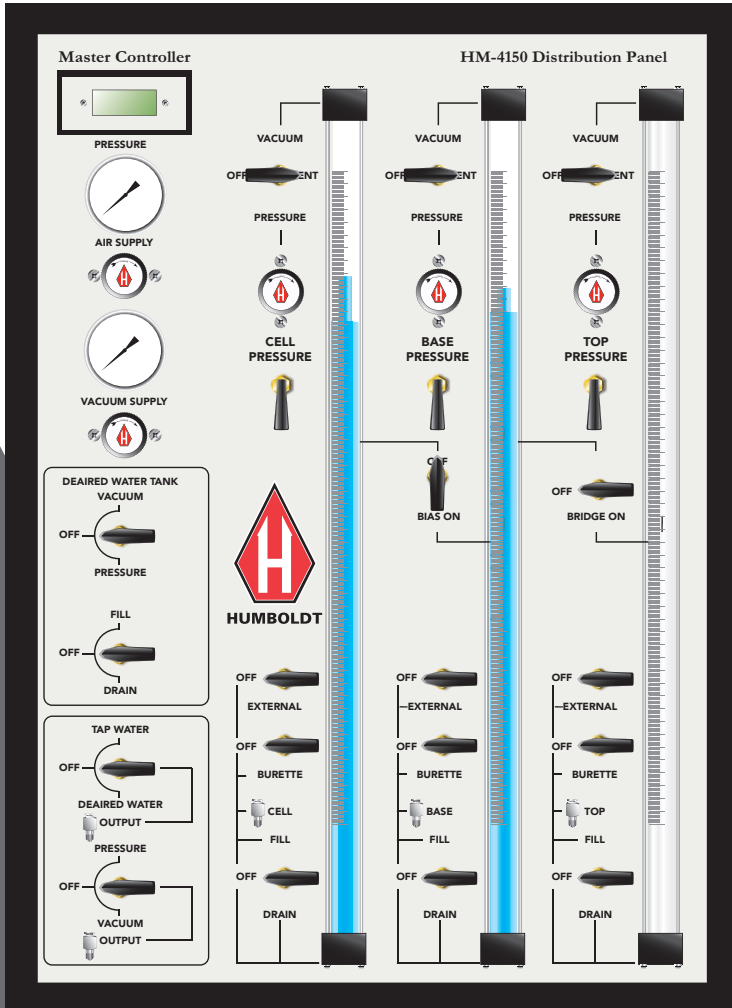
### STEP 9

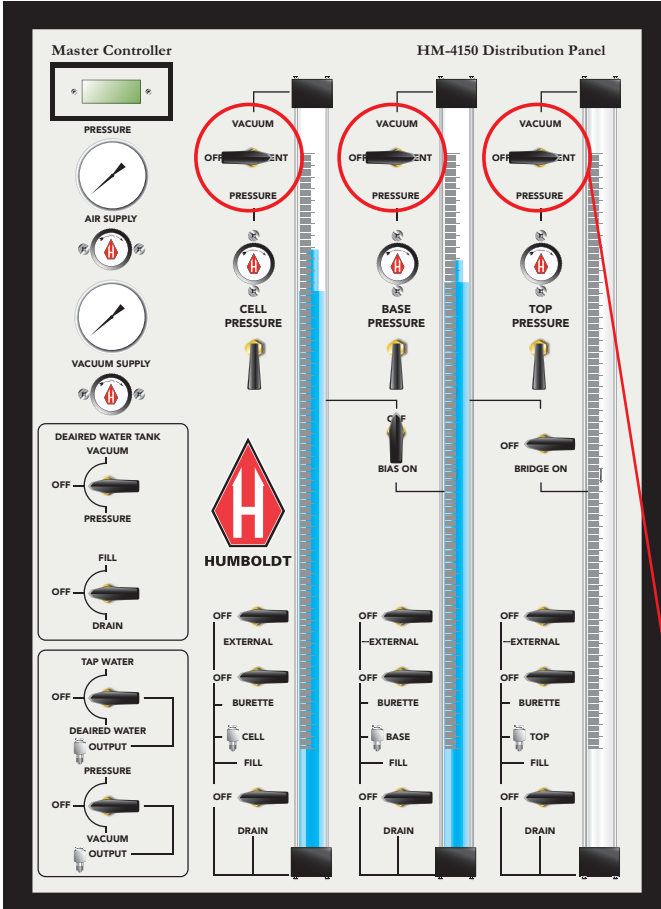
Turn the External and Burette Valve Indicators to OFF position.

9

Repeat this process (steps 3 through 9) to the Base and Top Burette Assemblies.

# How to Fill the Triaxial Cell Chamber

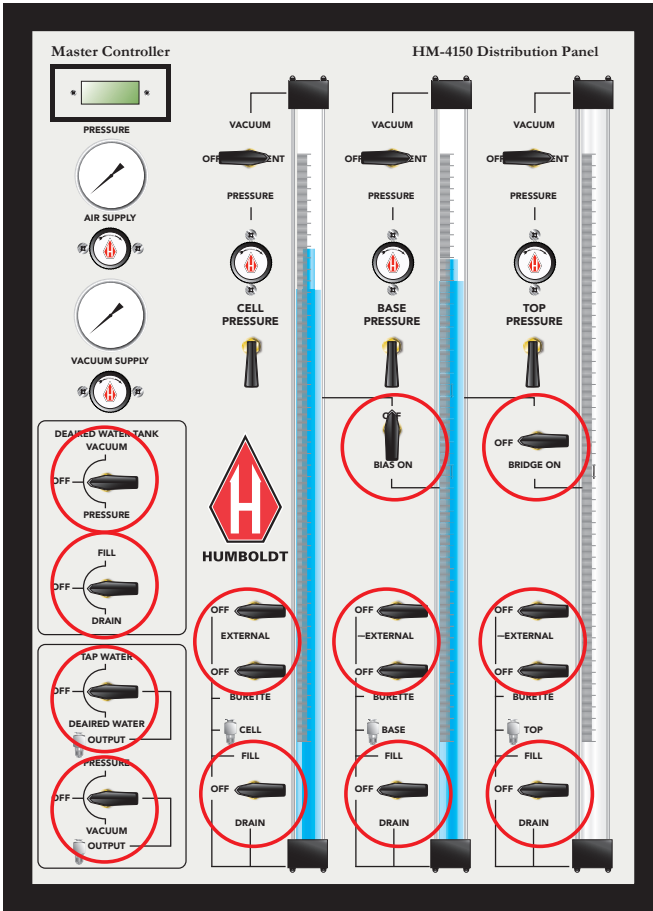




**STEP 1**

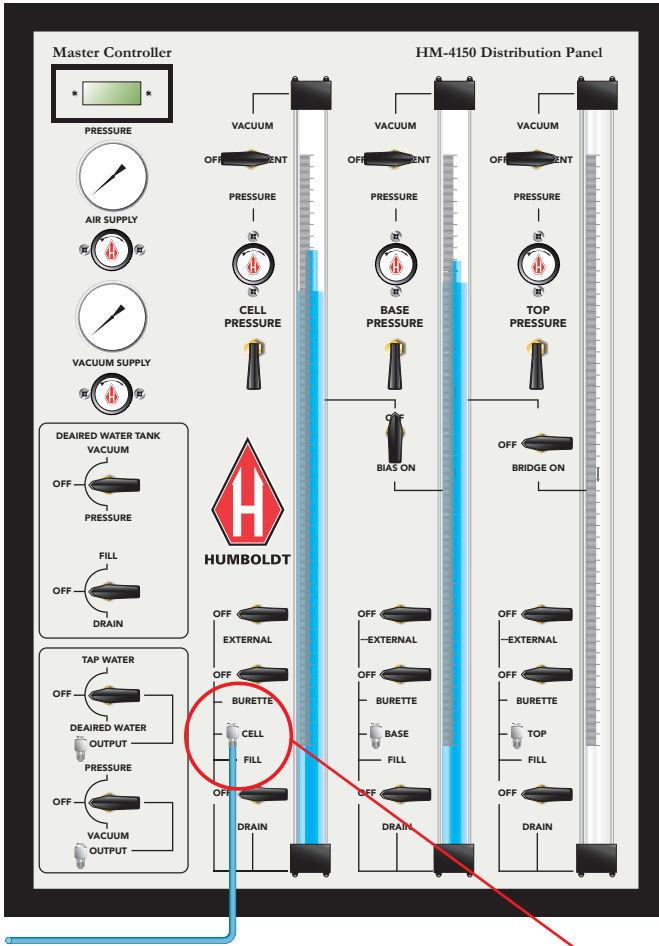
Turn all Pressure Valves to the Vent position.

1



## STEP 2

Turn all other Valves to the Off position.

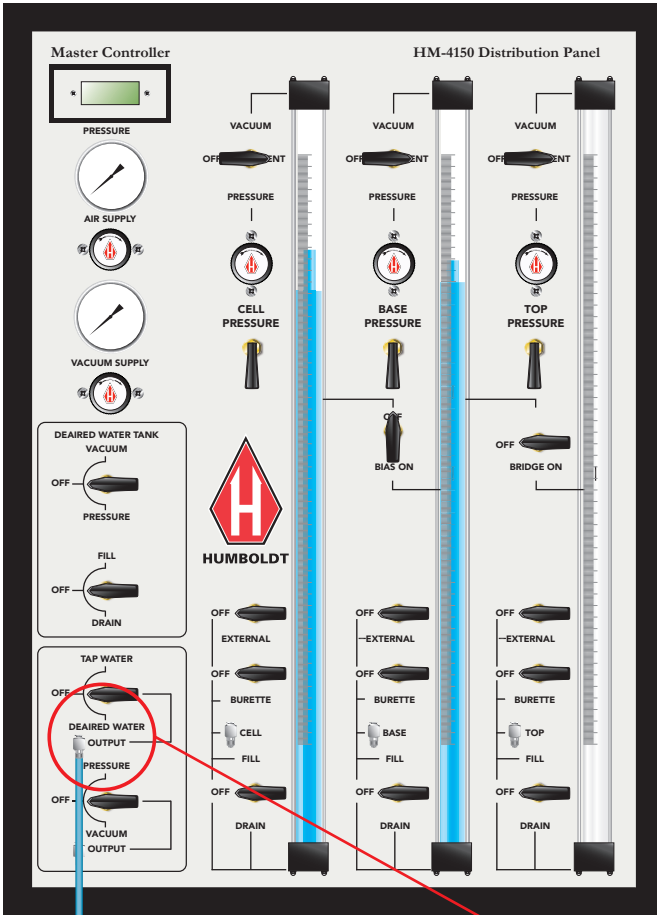


**STEP 3**

Disconnect the tubing from the Cell Input to the left of the first Cell Burette Assembly.

3

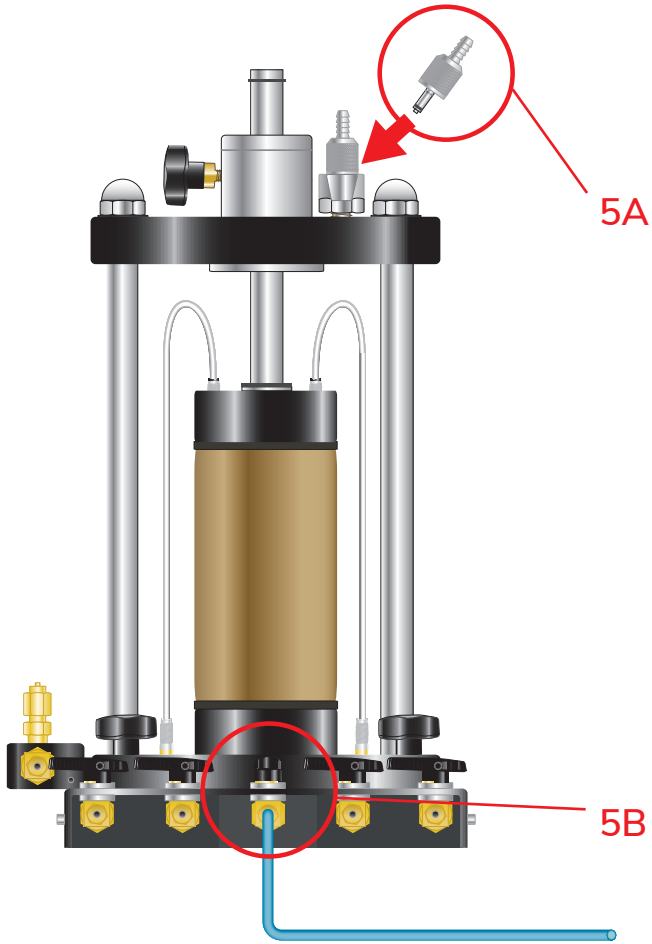




## STEP 4

Reconnect the tubing to the Tap Water Output port located at the lower left of the Master Control Panel.

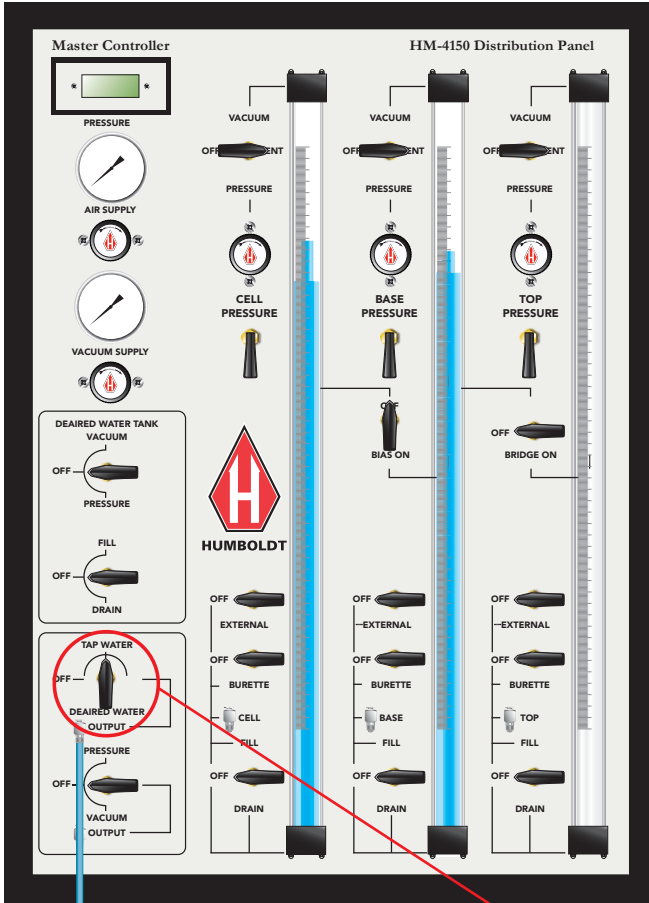
4



## STEP 5

**A.** Insert Vent Adapter into Vent on top of Triaxial Cell Chamber.

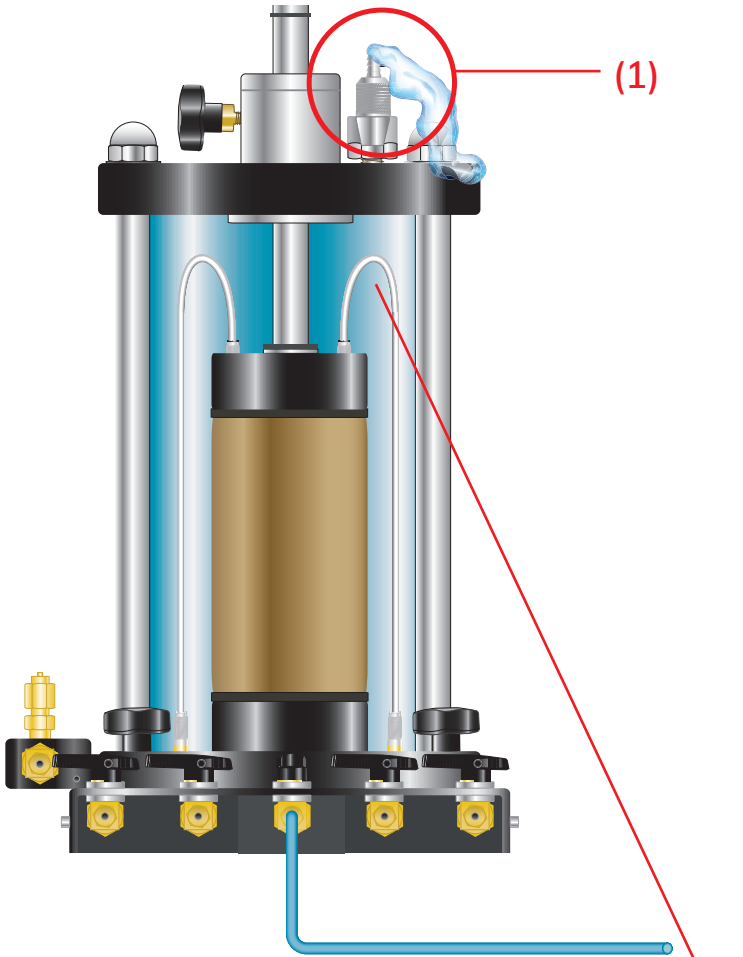
**B.** Open the Cell Valve to the Triaxial Cell.



**STEP 6**

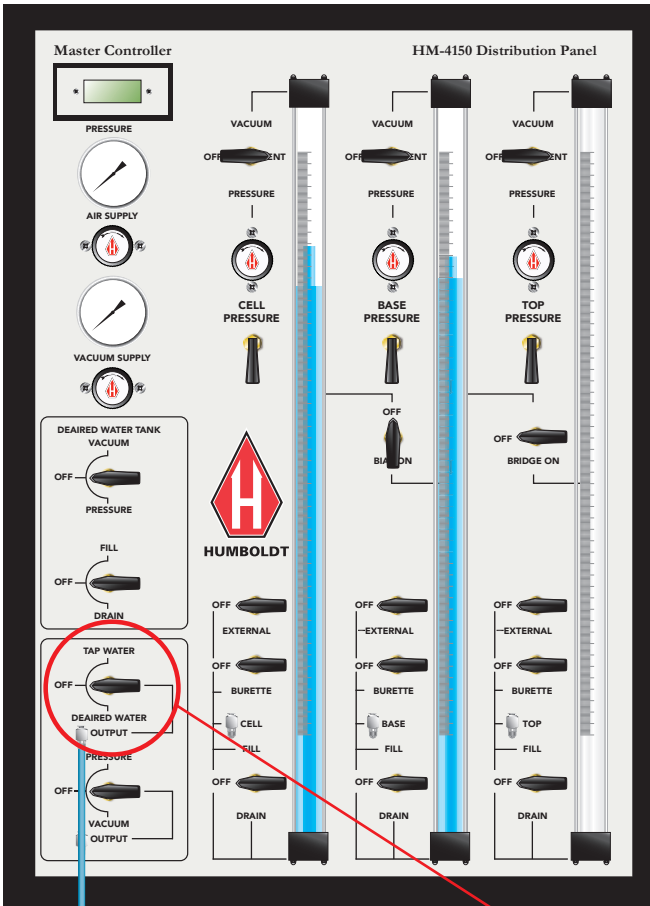
Fill the Triaxial Cell Chamber with Tap Water by turning the Valve Indicator to the Tap Water position.

6



**STEP 7**

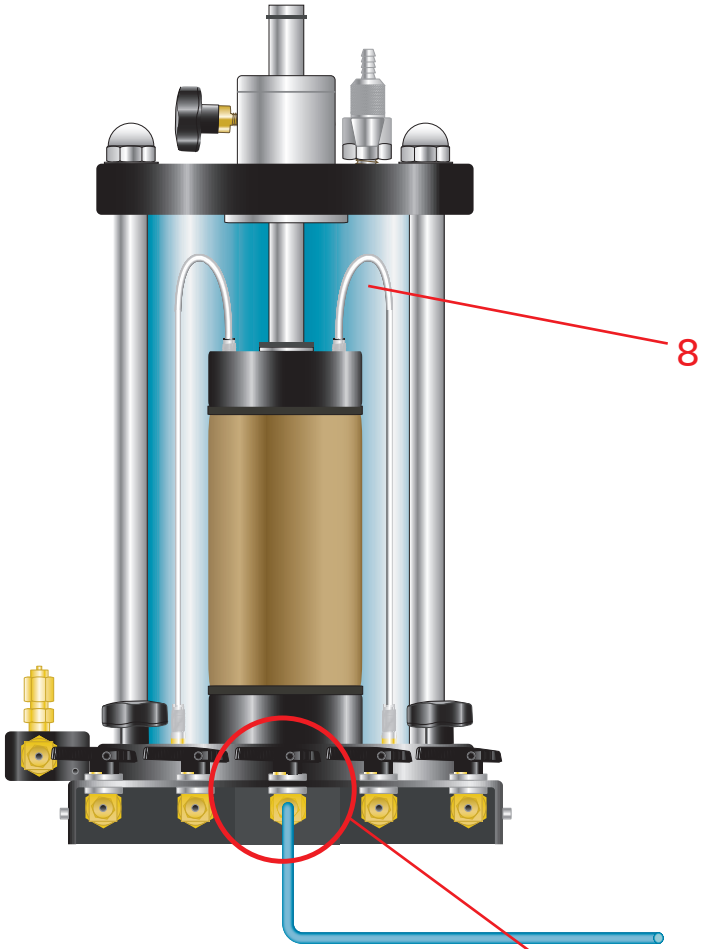
Slow the water fill rate of the cell chamber as the water level approaches the top of the cell chamber. Continue filling the cell until water exits the Cell Vent (1). **7**



**STEP 8**

Once water exits the Cell Vent on the Triaxial Cell, turn valve to the off position on the flex panel.

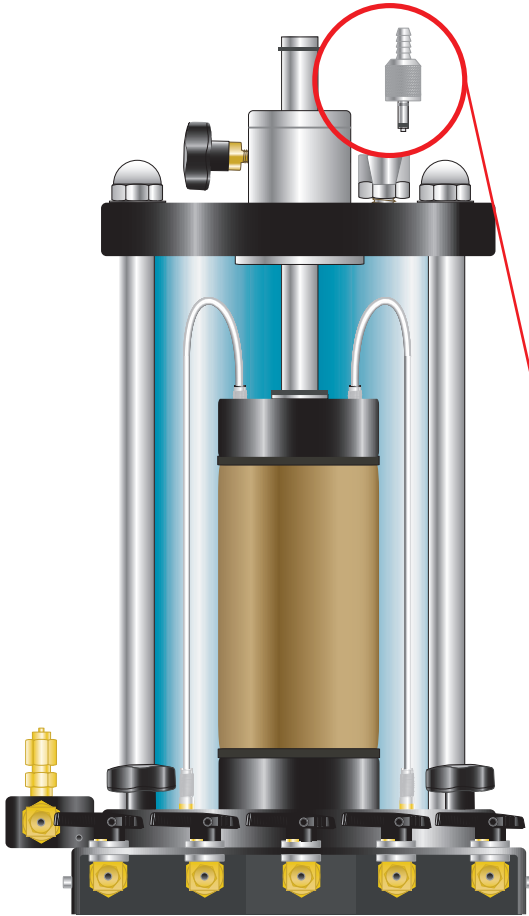
9



**STEP 9**

Close the Cell Valve on the Triaxial Cell (1).

(1)

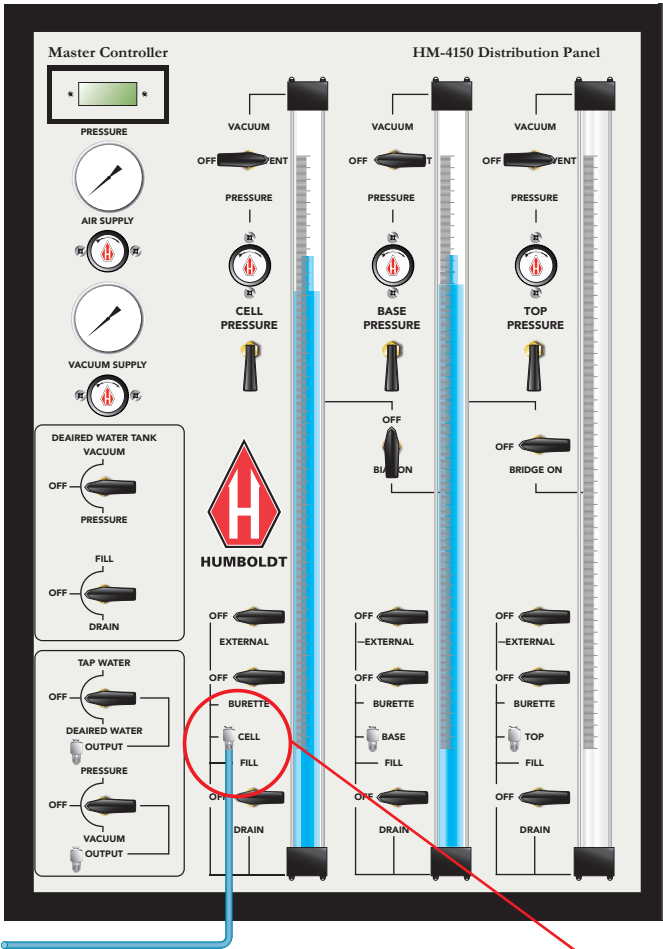


## STEP 10

(1) Finally, remove the Cell Vent Adapter from the Cell Vent on the Triaxial Cell (1).

(1)

These last three steps should be done in the described order or tests may not be accurate.

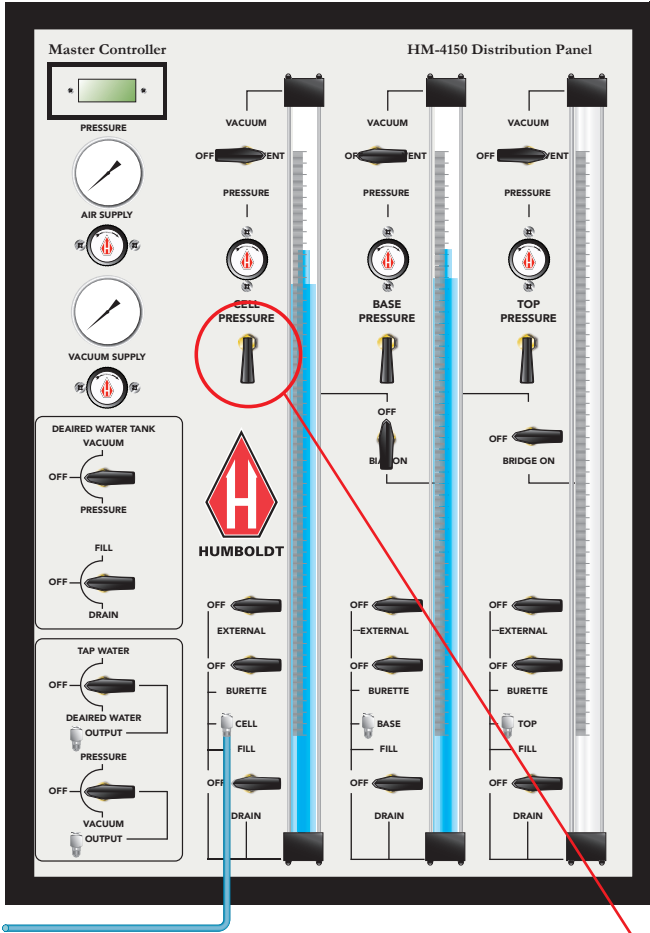


**STEP 11**

Disconnect the tubing from the Tap Water Output and reconnect it to the Cell Input to the left of the first Cell Burette Assembly.

**11**

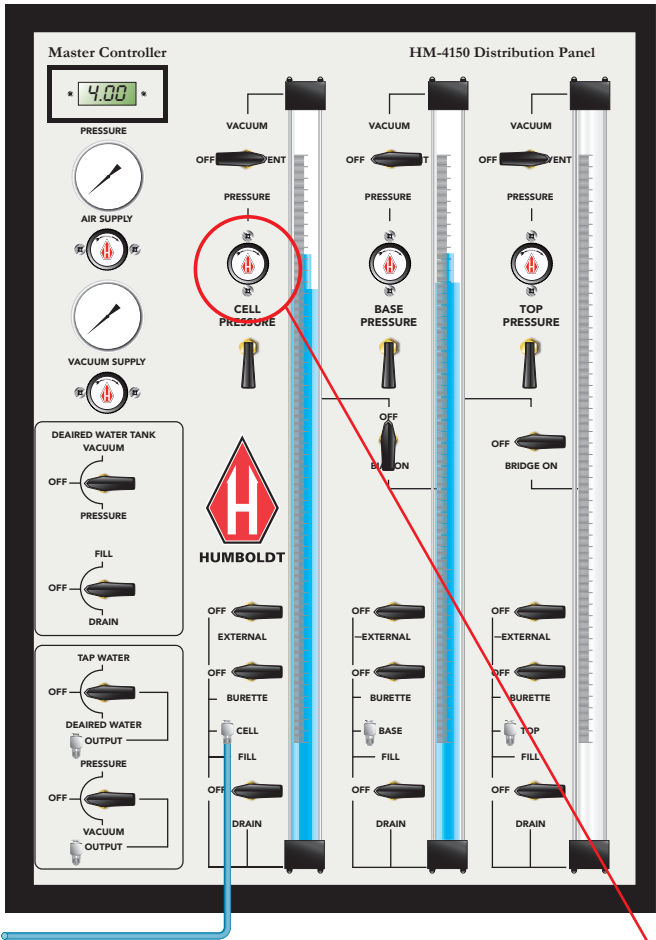




## STEP 12

To be able to read the Cell Pressure when you adjust the Regulator in the next step, first flip this toggle up, which will reveal the Cell Pressure in the Pressure window located at the top left corner of the HM-4150 Panel.

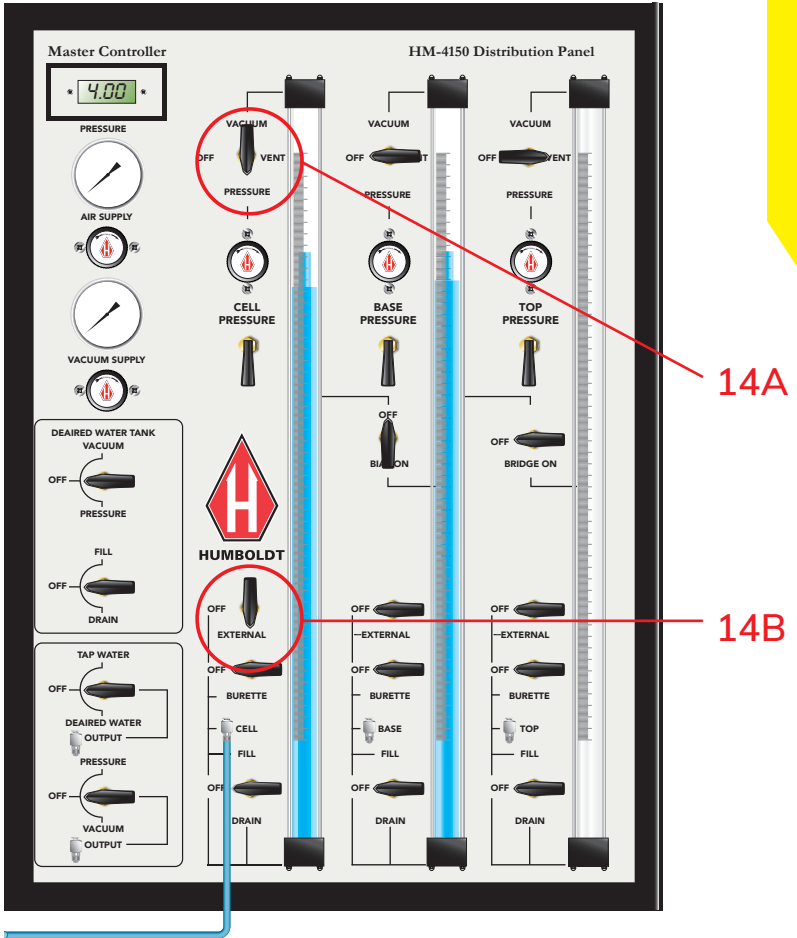
12



### STEP 13

Adjust the Cell Pressure Regulator to 3-5 psi using the circular adjustment knob labeled Cell Pressure. You will be able to see the readings in the Pressure window located in the top left corner of the HM-4150 Panel.

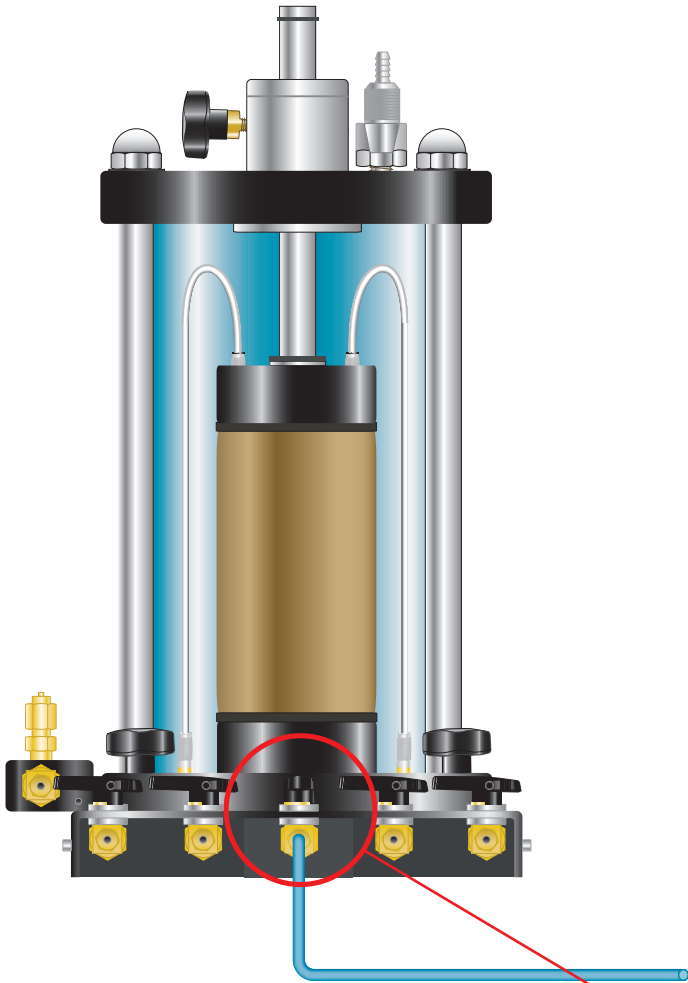
13



## STEP 14

**A.** Turn the Valve above the Cell Pressure Regulator to the Pressure position.

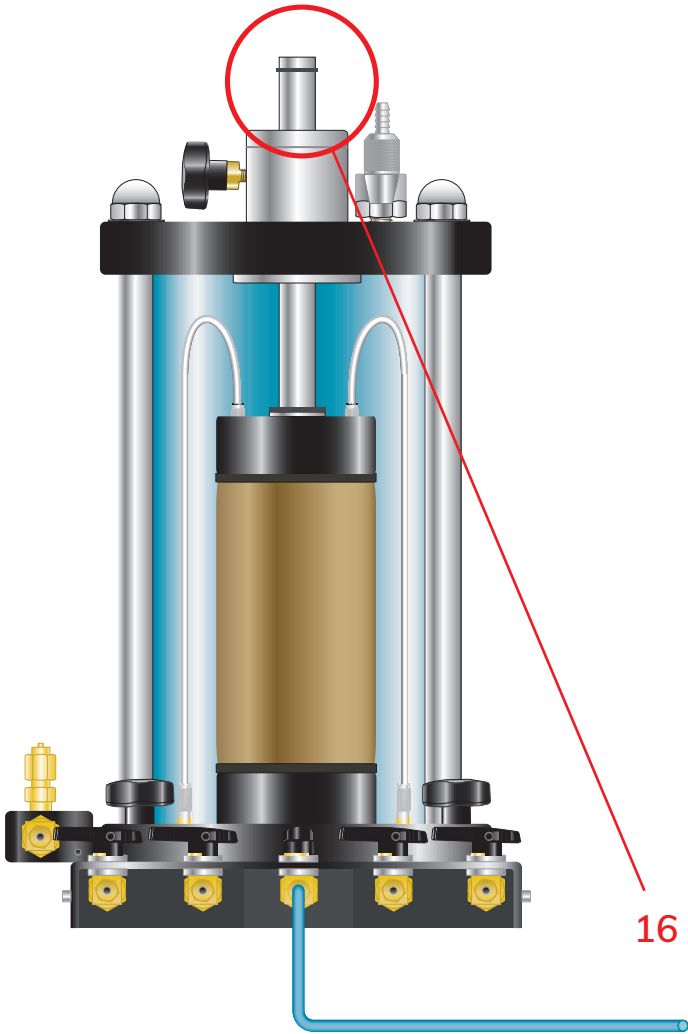
**B.** Turn the External Valve on the Cell Burette Assembly to the On position.



**STEP 15**

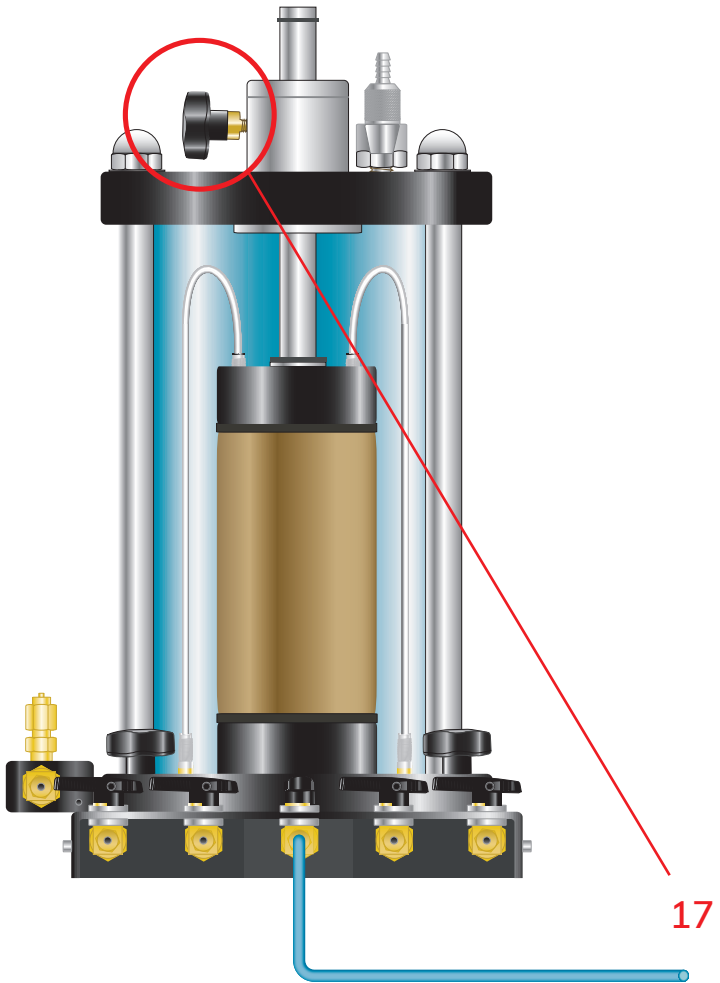
Turn the Cell Valve on the Triaxial Cell to the On position.

**15**



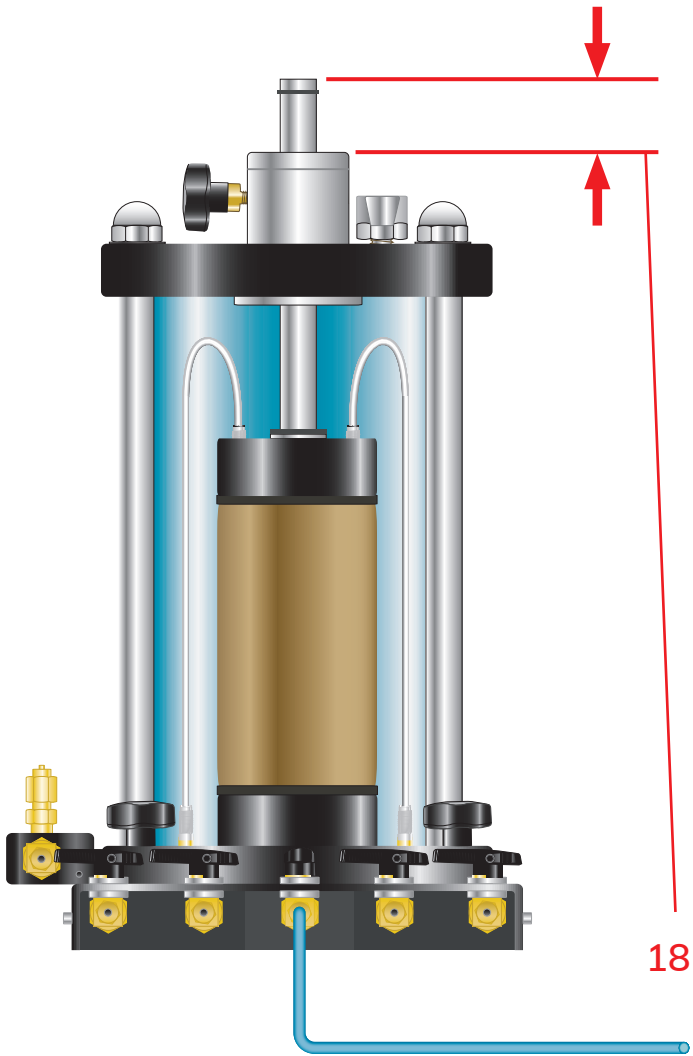
### STEP 16

Bring the Triaxial Cell Piston into contact with the Specimen Top Cap without applying a load to the Specimen.



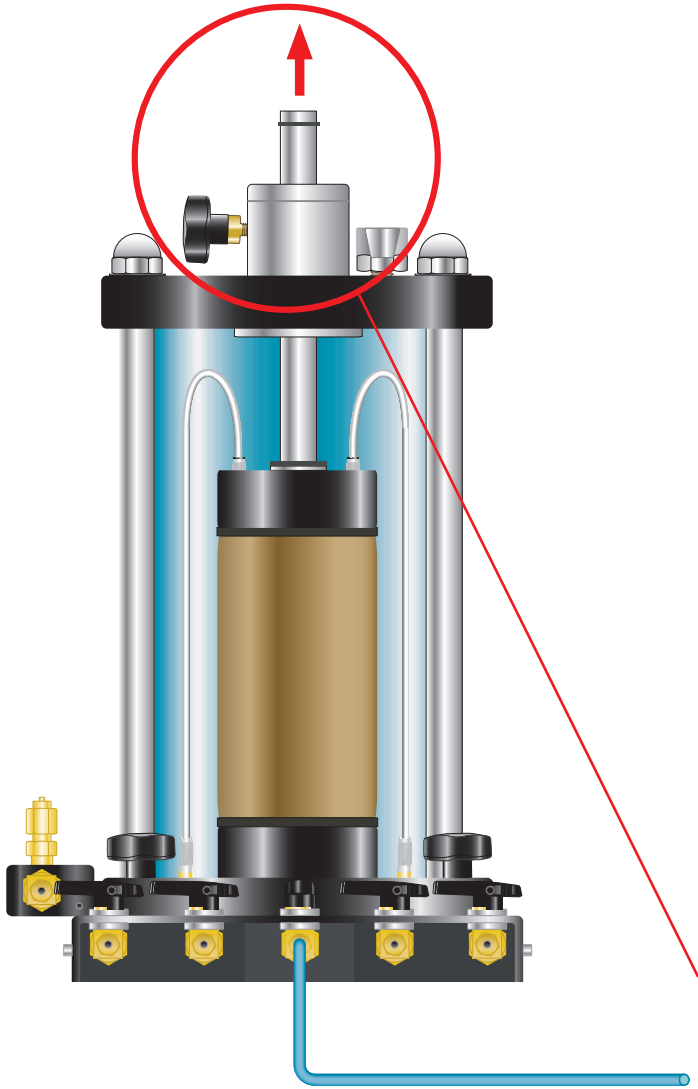
**STEP 17**

Lock the Piston into position.



**STEP 18**

Measure Specimen reference height.

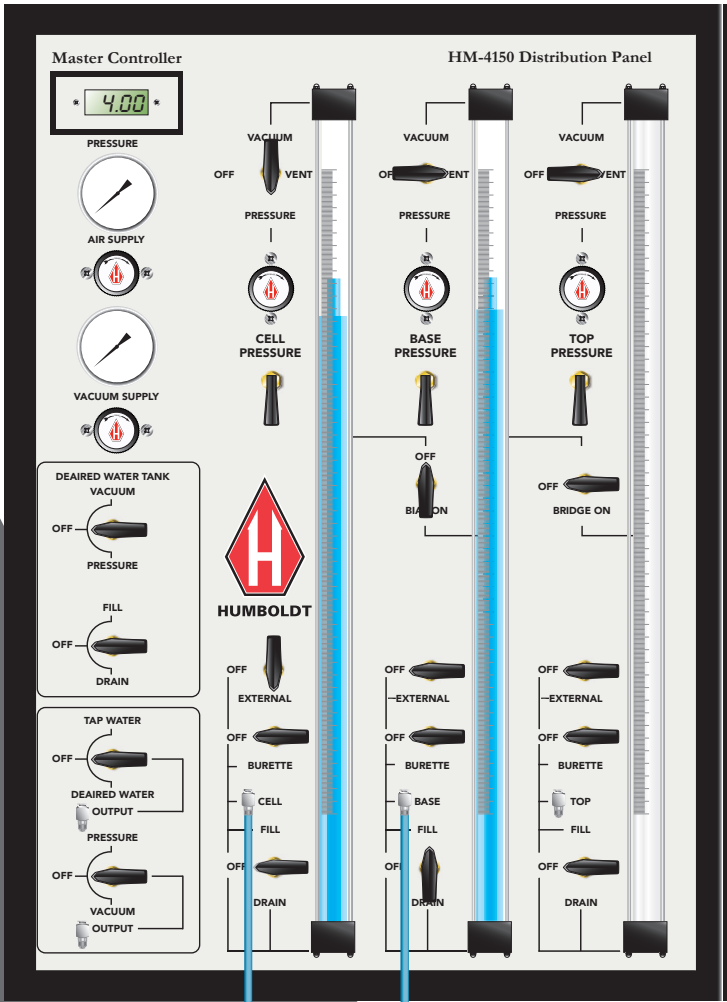


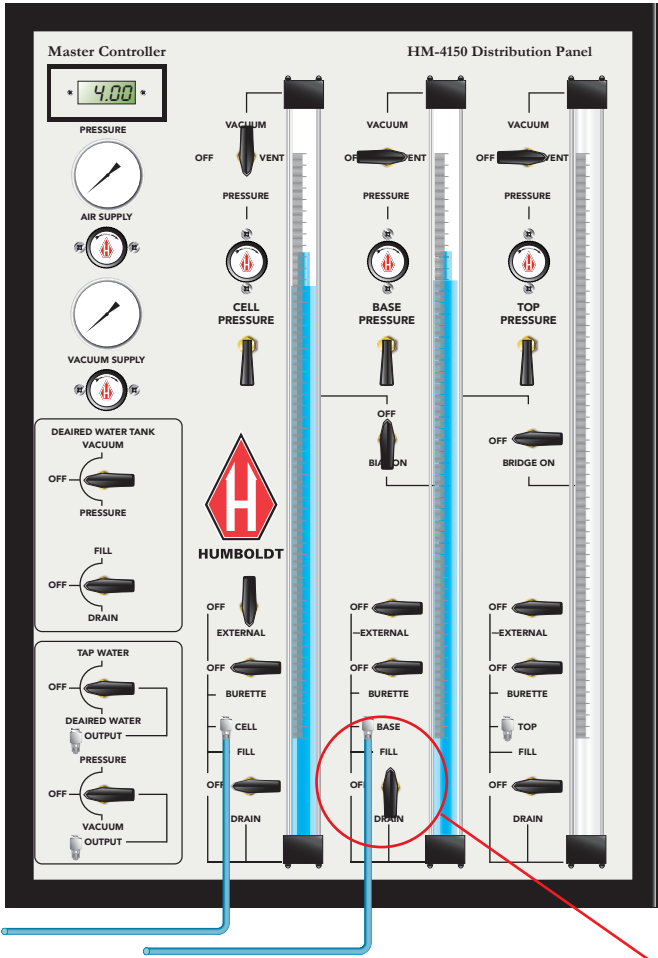
### STEP 19

1. Unlock the Piston.
2. Move the Piston up 1/8" (3mm).
3. Relock the Piston.



# Saturating (De-airing) Drainage Lines

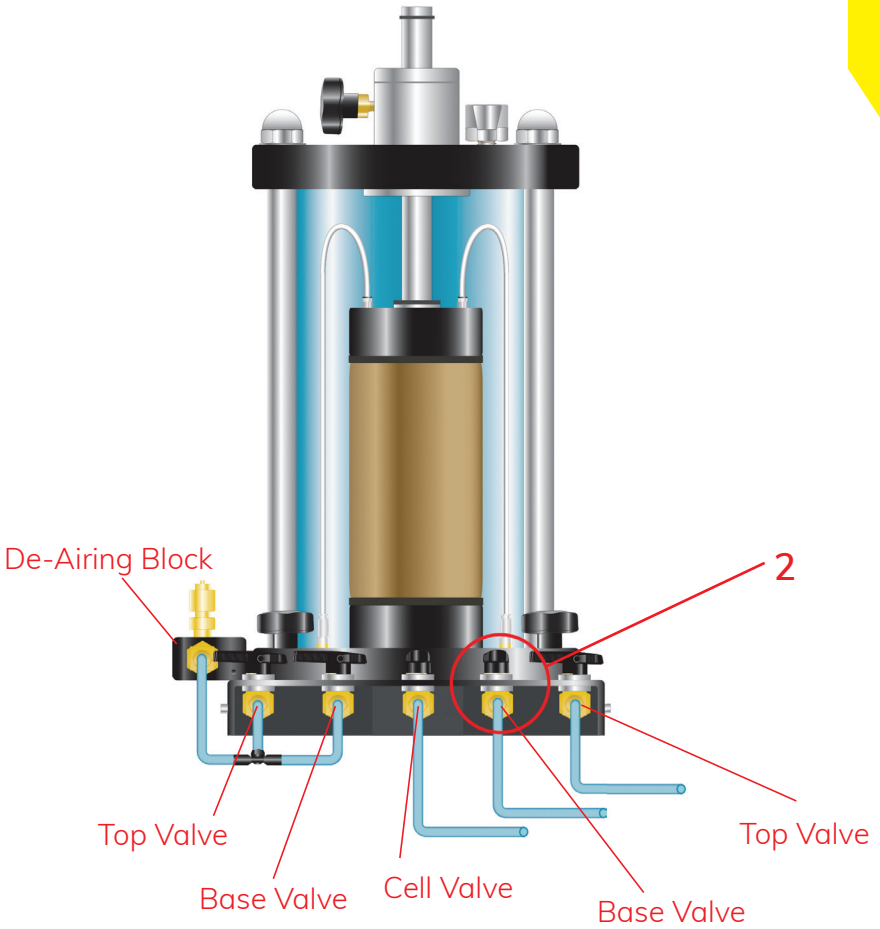




**STEP 1**

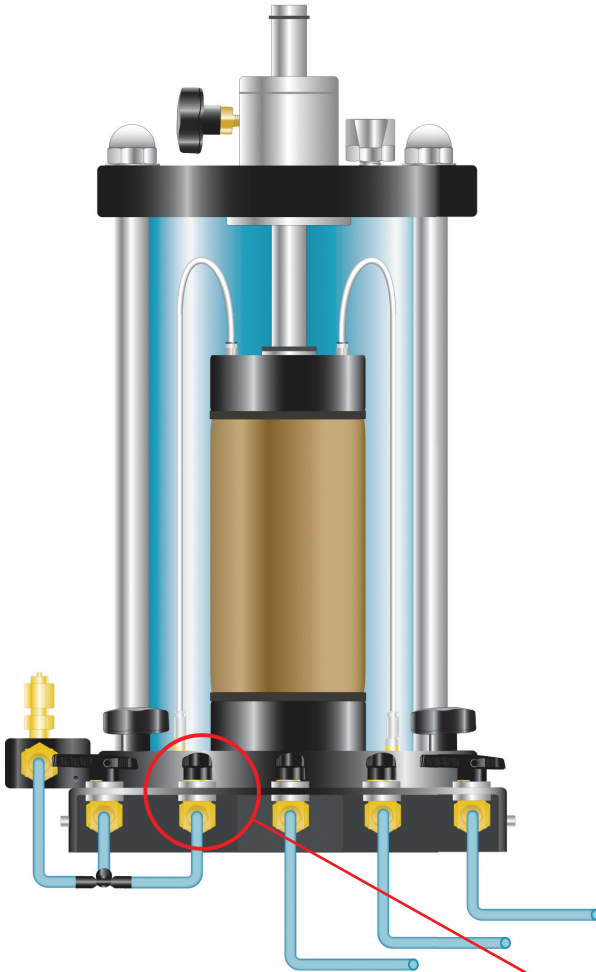
Turn Base Burette Assembly Fill/Drain Valve to Fill.

**1**



## STEP 2

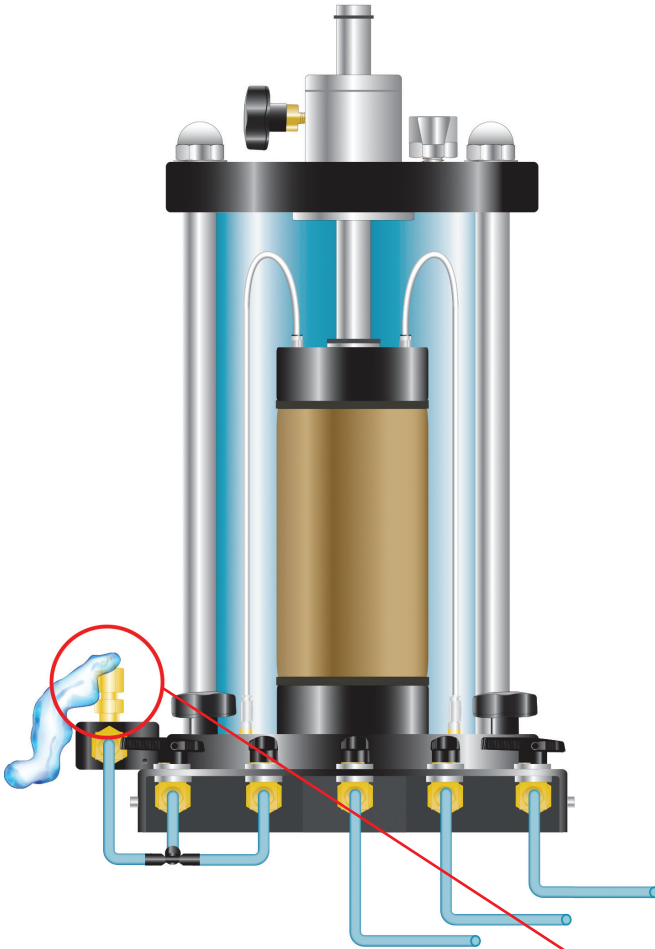
Open Base Valve located on the right-hand side of the Triaxial Cell.



**STEP 3**

Open Base Valve located on the left-hand side of the Triaxial Cell.

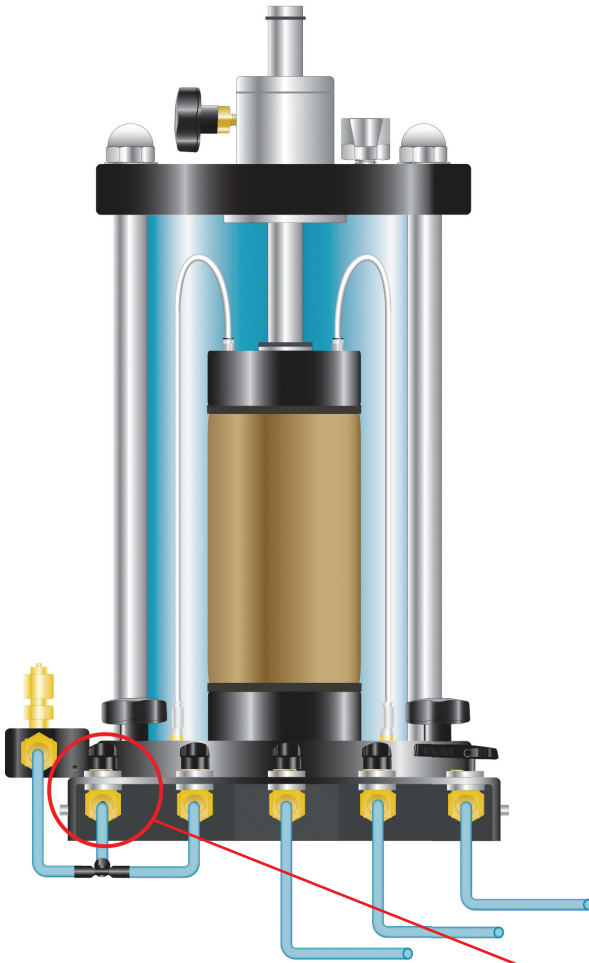
3



**STEP 4**

Open the Vent on the top of the De-airing Valve.  
Once water begins to flow out, close the Vent.

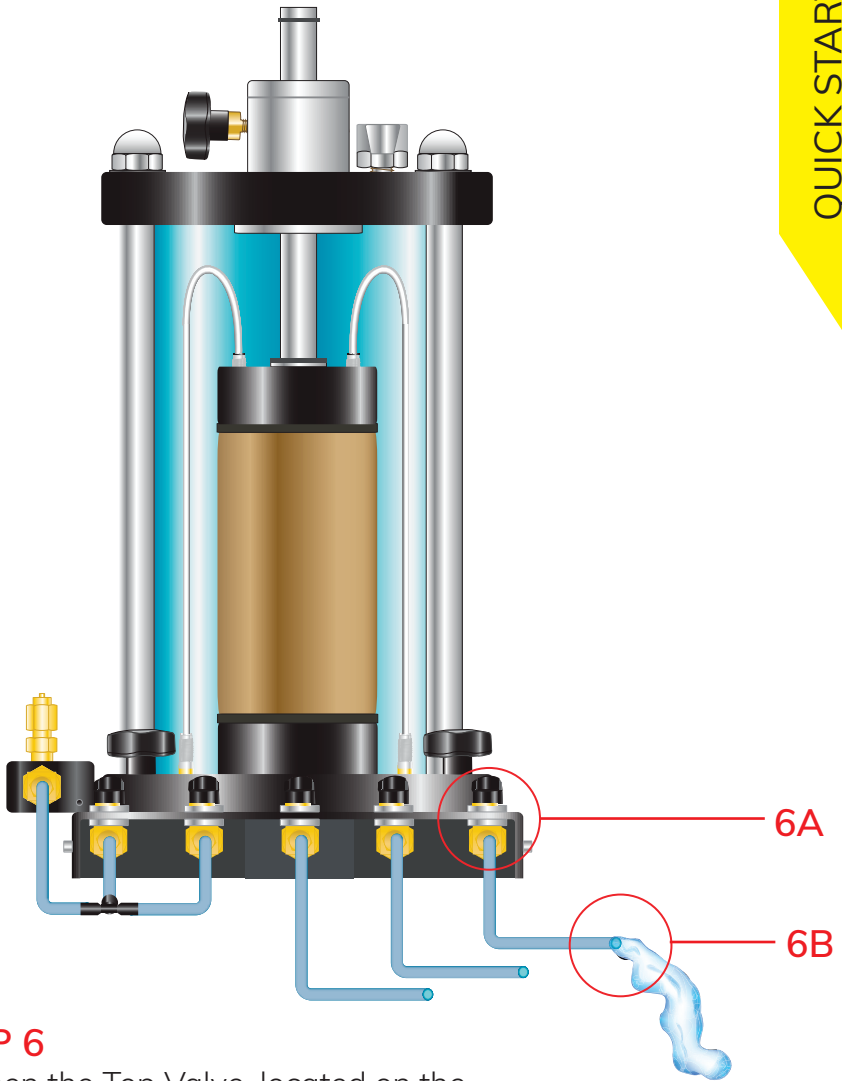
4



**STEP 5**

Open the Top Valve, located on the left-hand side of the Triaxial Cell.

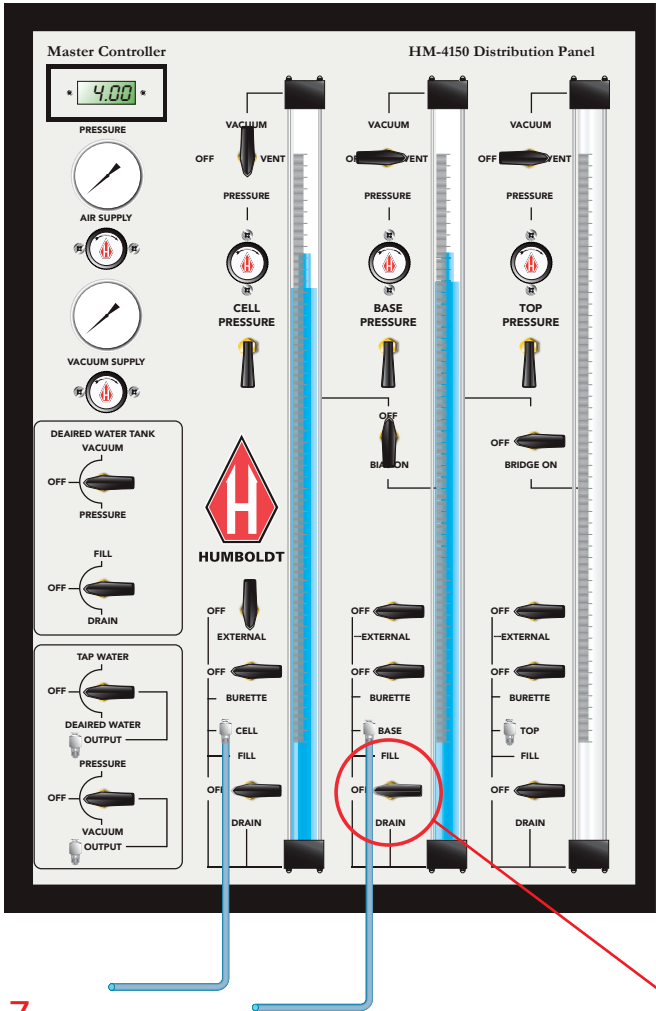
**5**



## STEP 6

**A.** Open the Top Valve, located on the right-hand side of the Triaxial Cell.

**B.** To catch the water flowing out of the Valve, provide a container or direct the tubing to a drain.



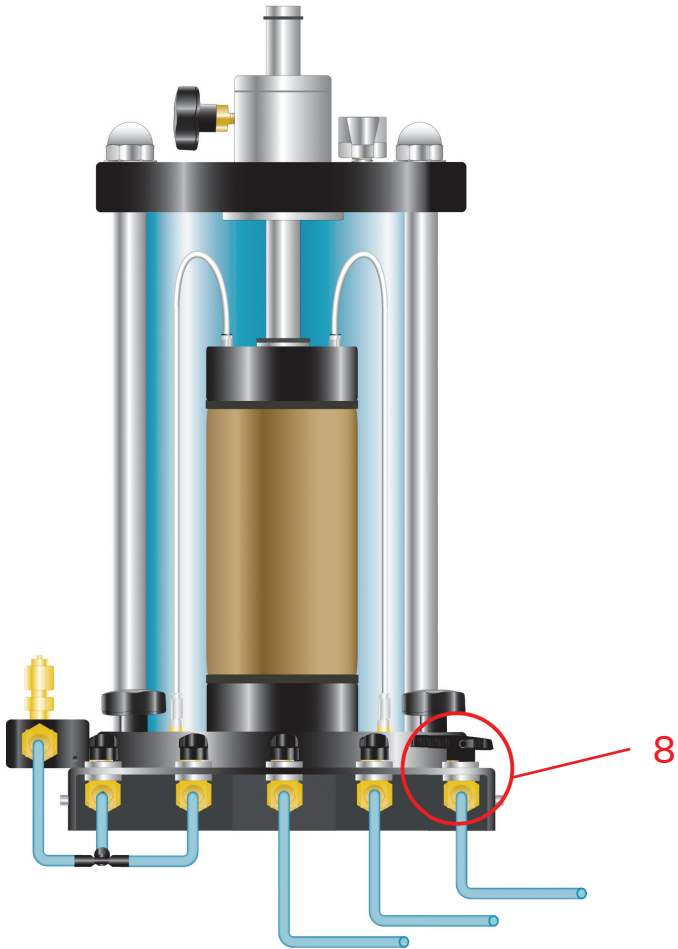
**STEP 7**

When air bubbles are no longer evident in the drainage line coming from the Cell.

7

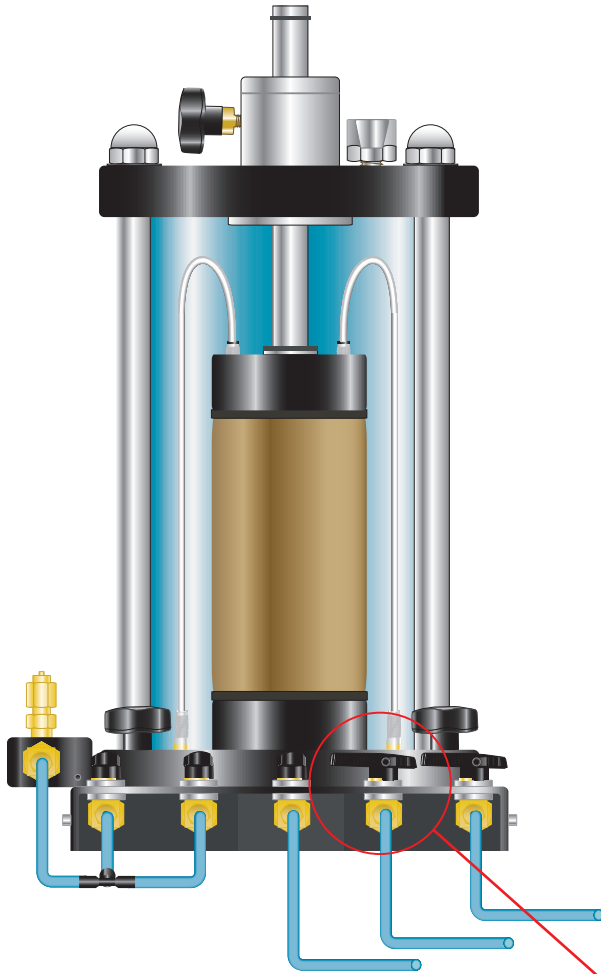
Turn Base Burette Assembly Fill/Drain Valve to Off.





## STEP 8

Then, close the Top Valve, located on the right-hand side of the Triaxial Cell.

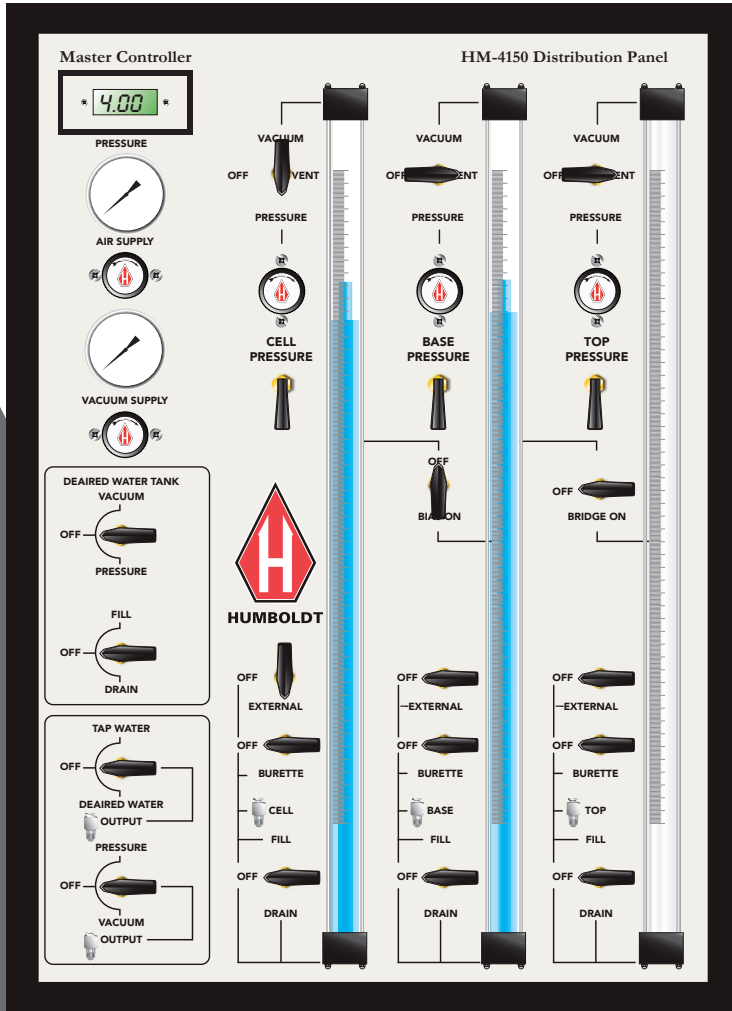


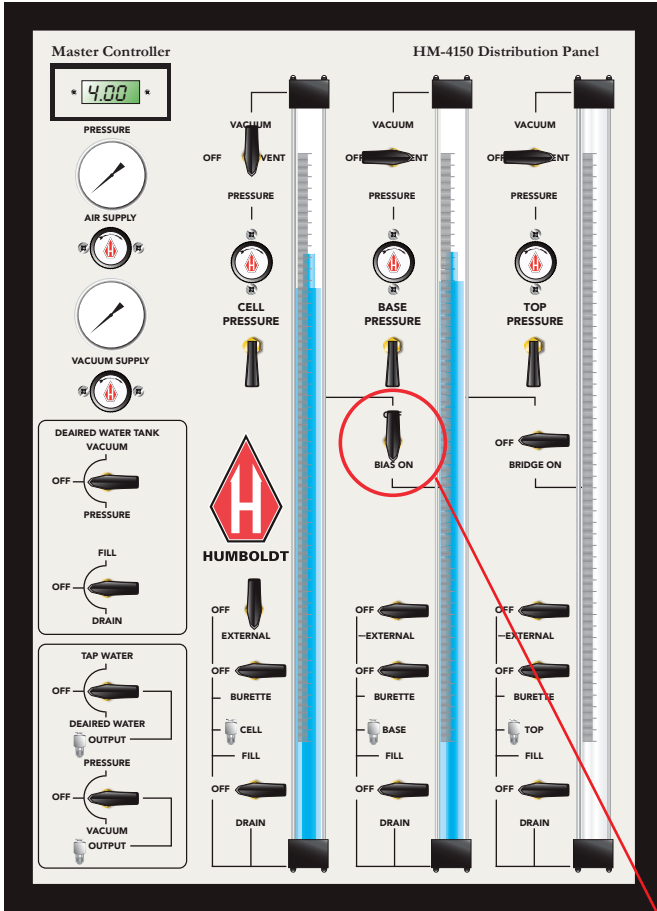
**STEP 9**

Close the base valve on the right side of the cell in preparation for saturation phase.

9

# Saturation and Recording B Values

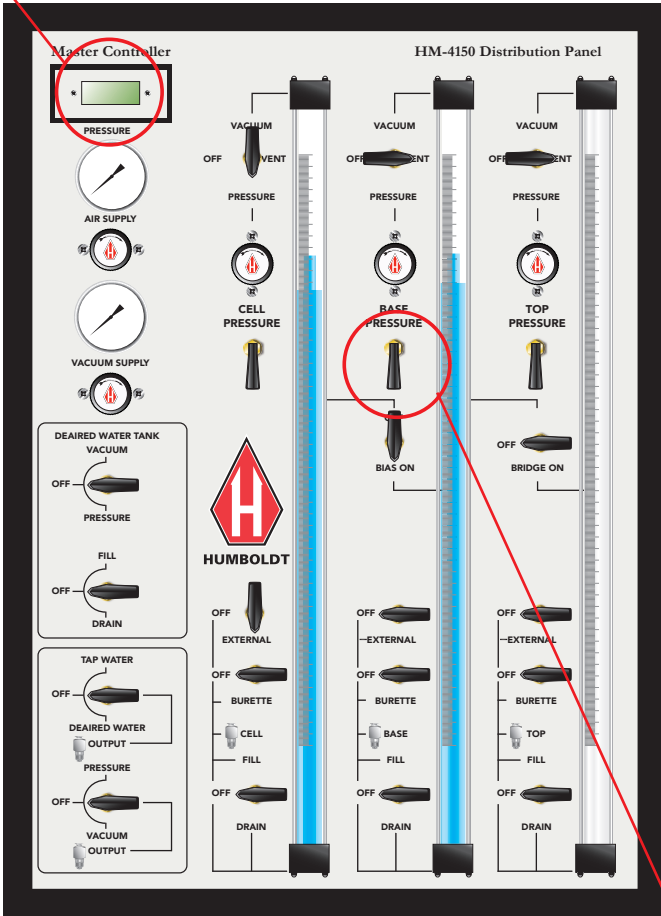




**STEP 1**  
Turn Bias Valve to on.

1

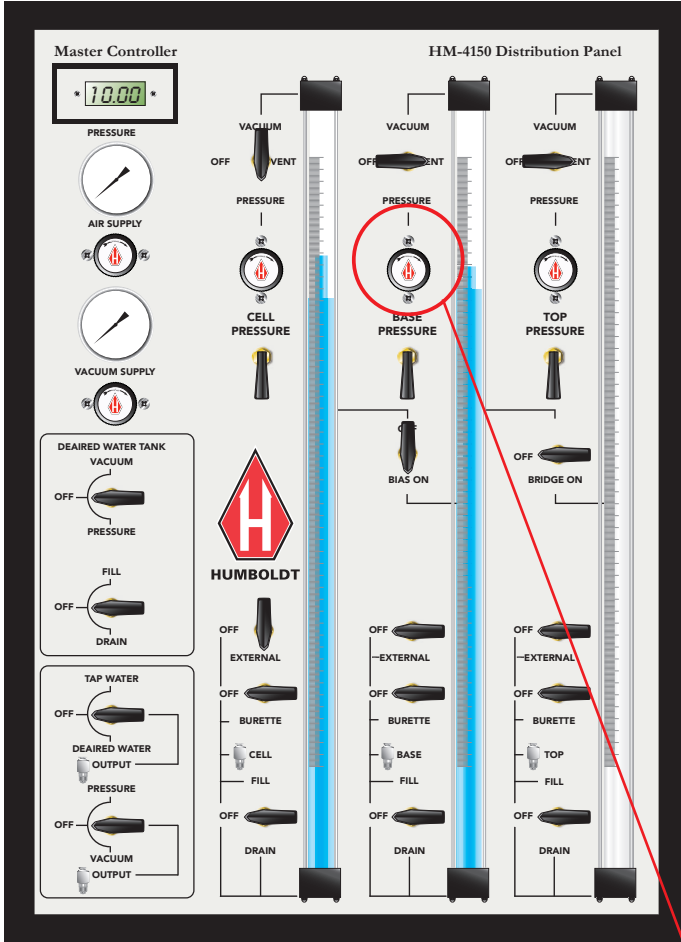
1



2

## STEP 2

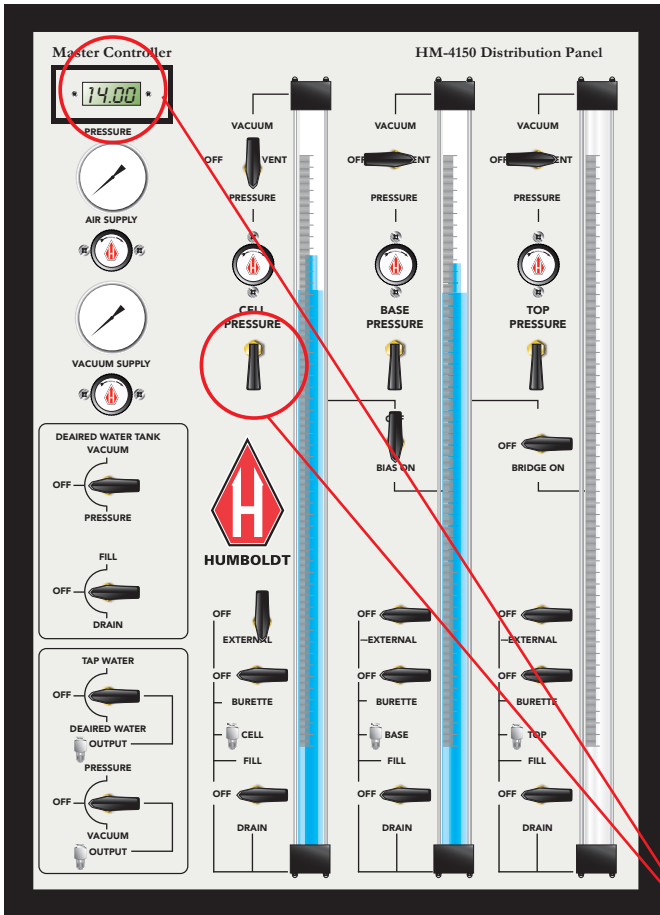
Flip this toggle up, which will reveal the Base Pressure in the Pressure window (1) located at the top left corner of the HM-4150 Panel.



**STEP 3**

Adjust the Base Pressure Regulator to 10 psi.

3

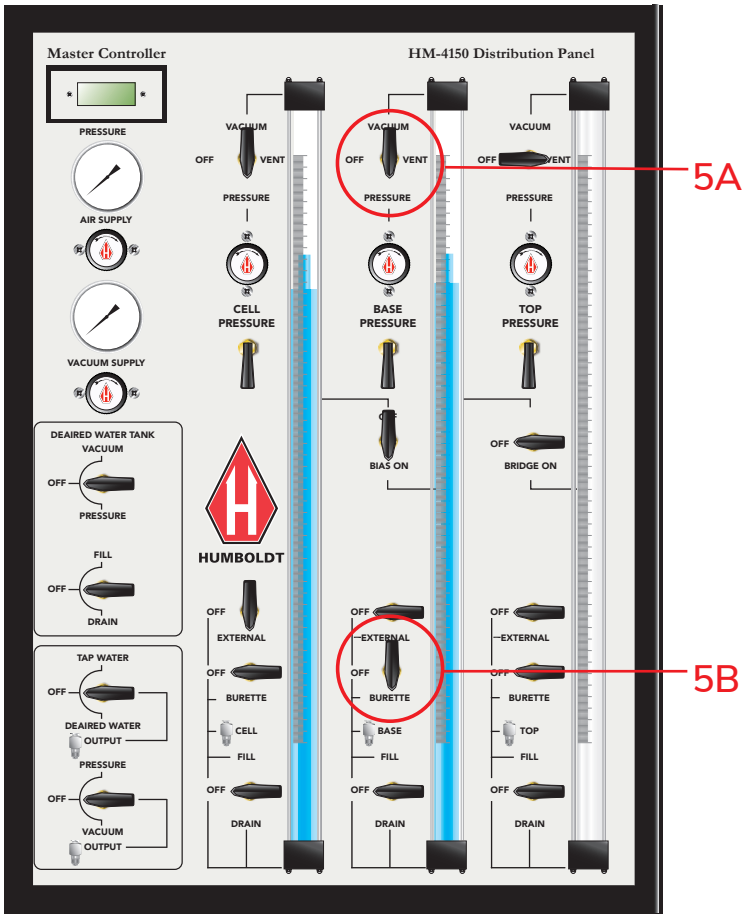


## STEP 4

To check the resulting Cell Pressure in the Pressure window, flip the Base Pressure Toggle down and Flip the Cell Pressure toggle up. The Cell Pressure will be revealed.

In this case, the Cell Pressure will read 13-15 psi because the Bias Valve is in the On position.

4

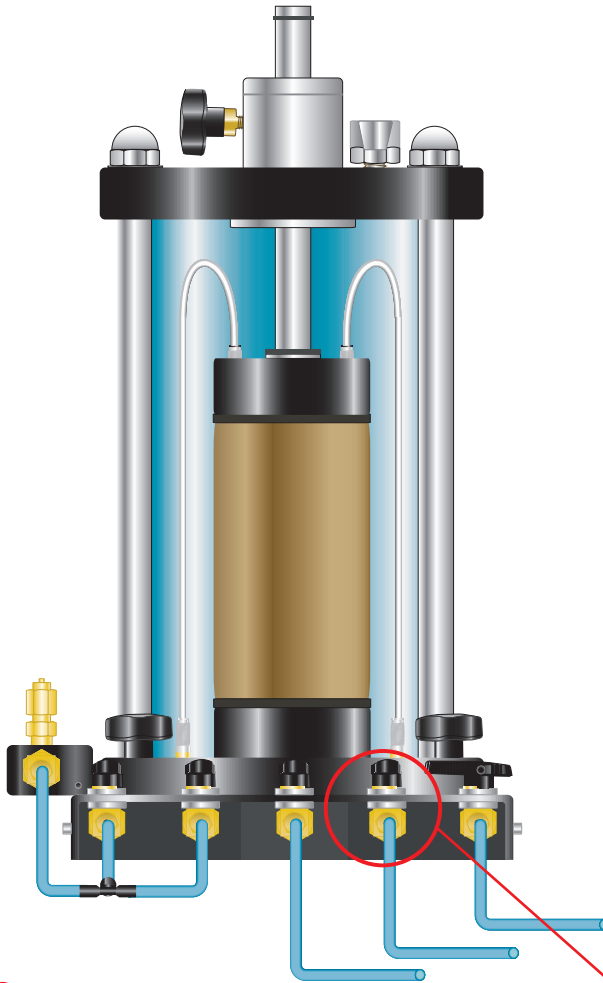


**STEP 5**

**A.** Turn Base Pressure Valve to Pressure.

**B.** Open the Burette Valve on the Base Burette Assembly.

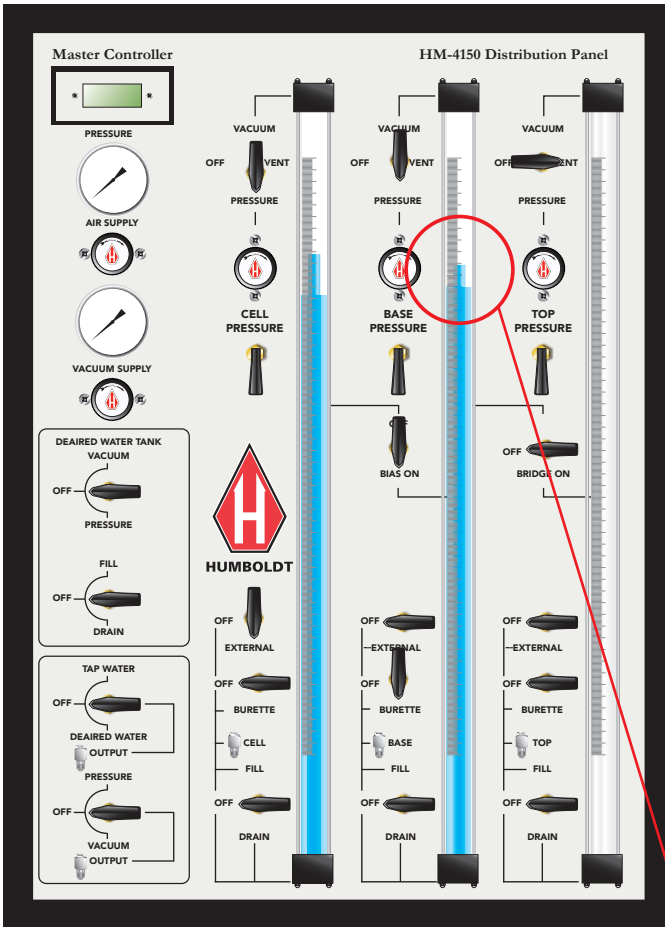




### STEP 6

Open Base Valve located on the right-hand side of the Triaxial Cell. 6

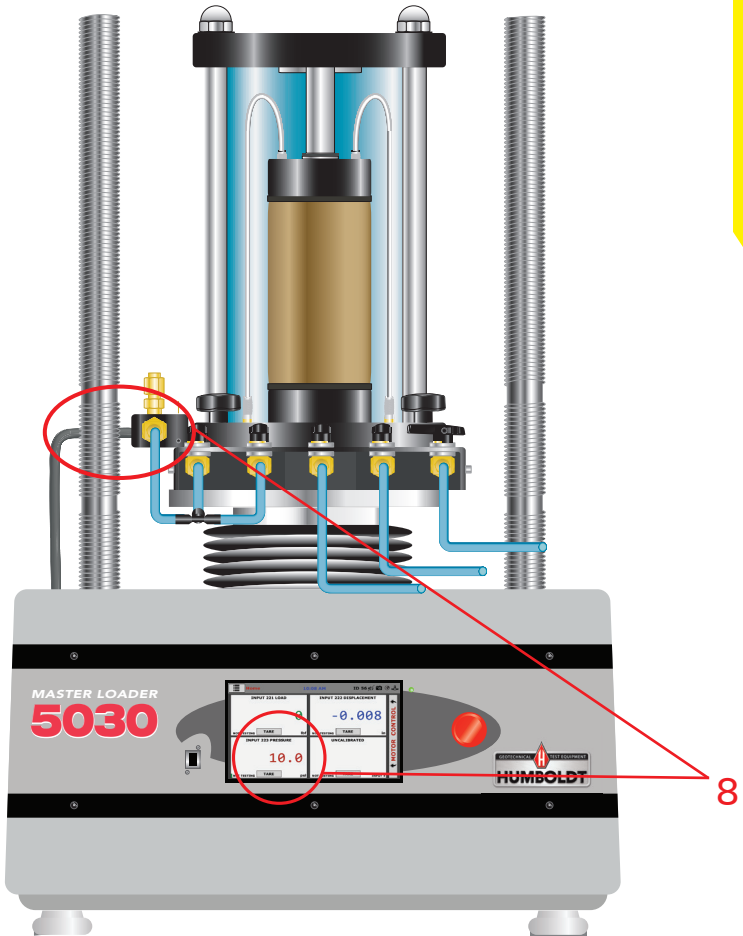
(Top and Base valves located on left hand side of the Triaxial Cell are open).



**STEP 7**

Record the Base Burette Level.

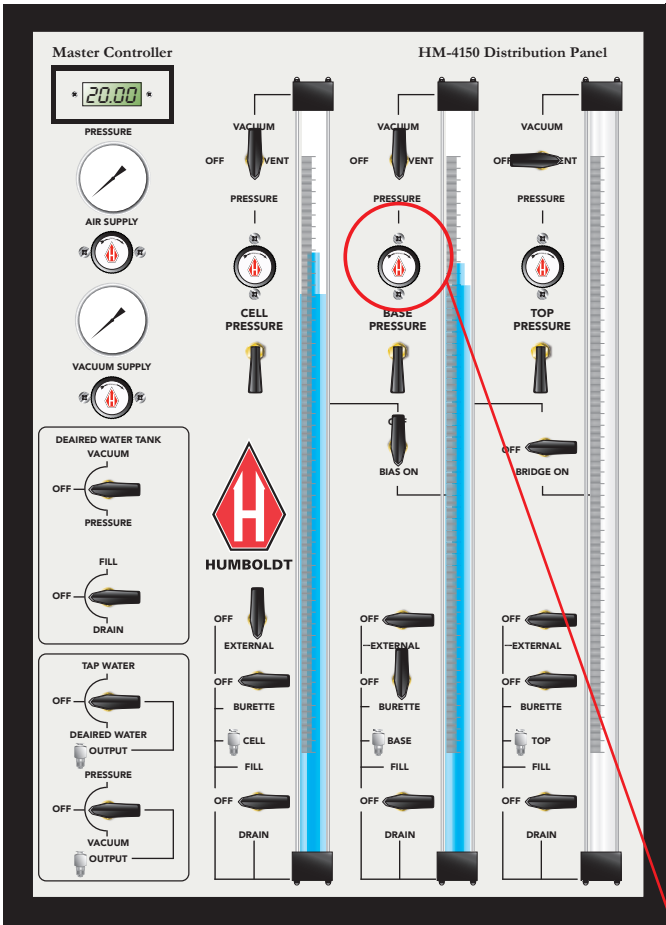
7



## STEP 8

Check readout of Pressure Transducer attached to the De-airing Block on the Triaxial Cell. This should read approximately 10 psi.

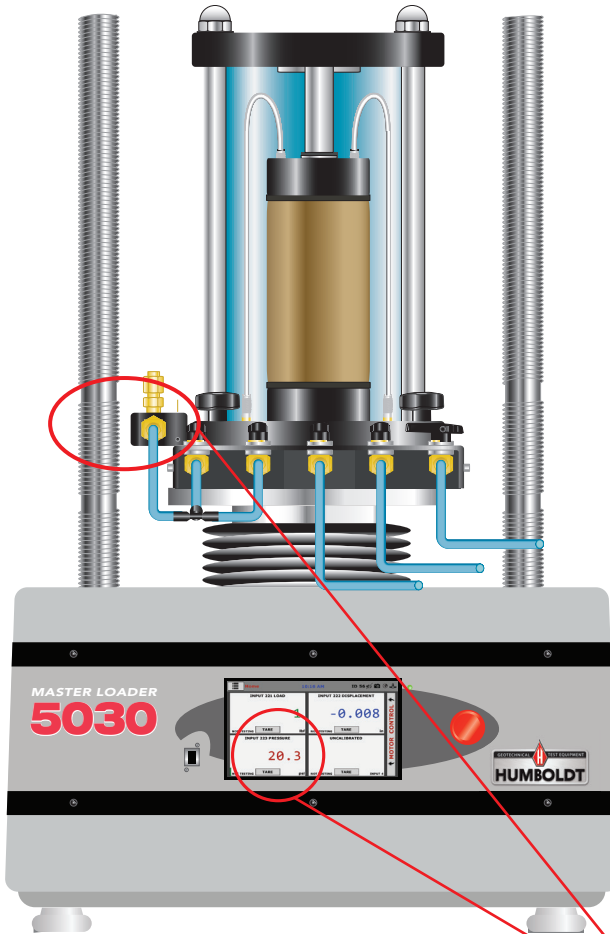
Be sure to allow sufficient time for this reading.



### STEP 9

Adjust the Base Pressure Regulator to 20 psi.

9

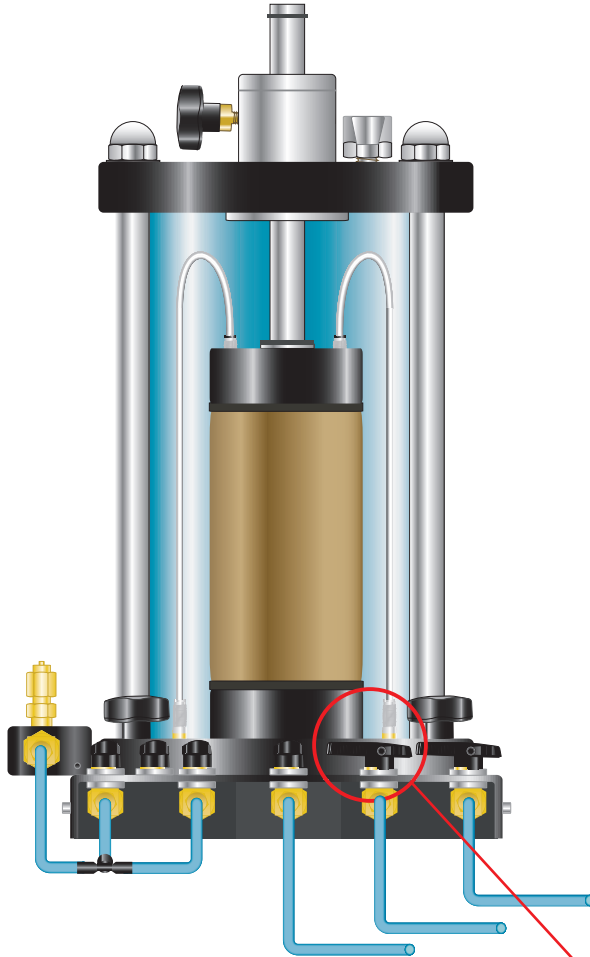


## STEP 10

Check readout of Pressure Transducer attached to the De-airing Block on the Triaxial Cell. This should read approximately 20 psi.

10

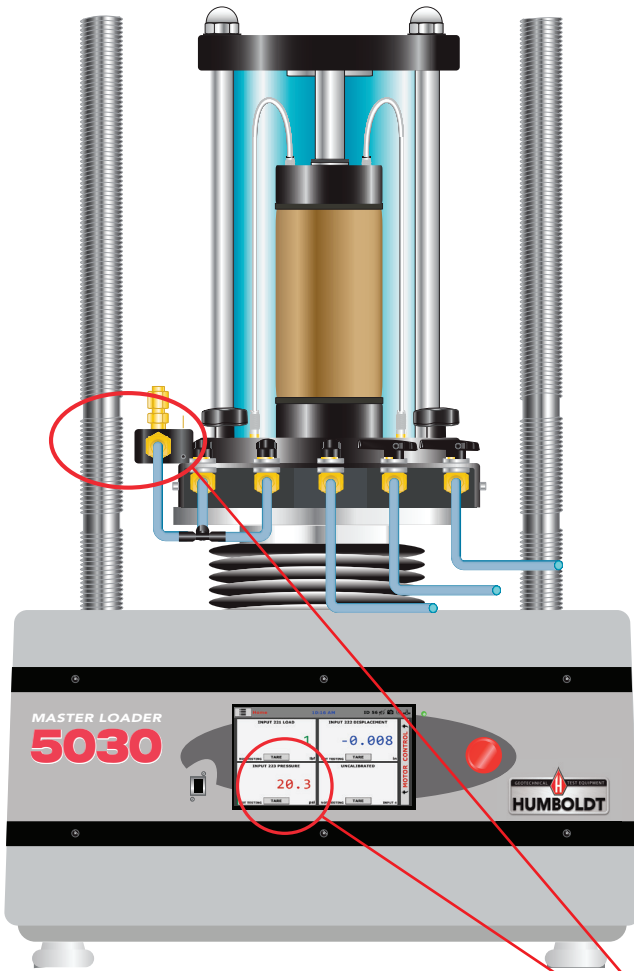
Be sure to allow sufficient time for this reading.



**STEP 11**

Close the Base Valve located on the right-hand side of the Triaxial Cell.

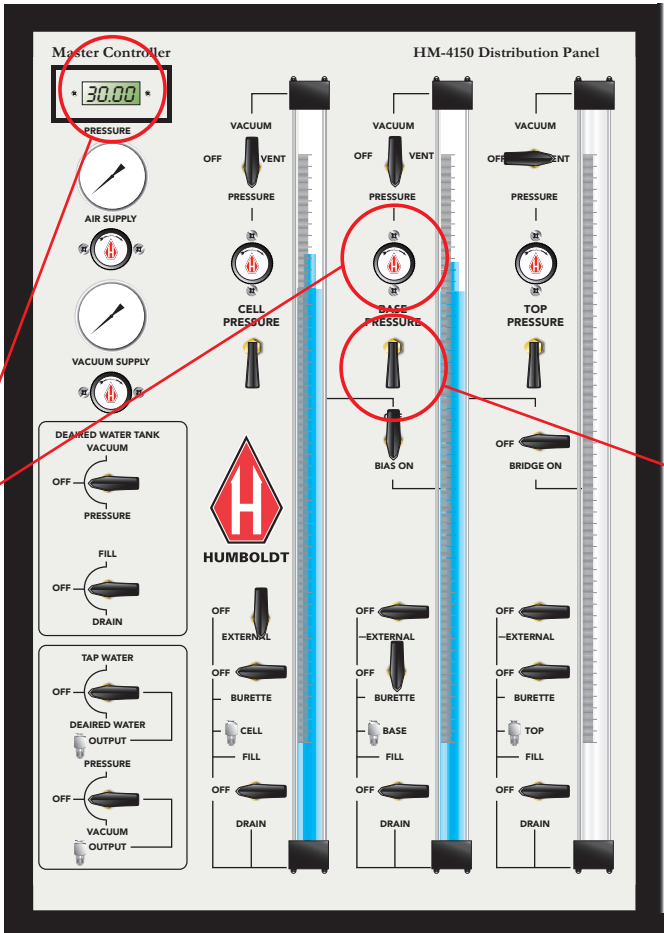
**11**



## STEP 12

Record the Pore Pressure reading after approximately 1 minute.

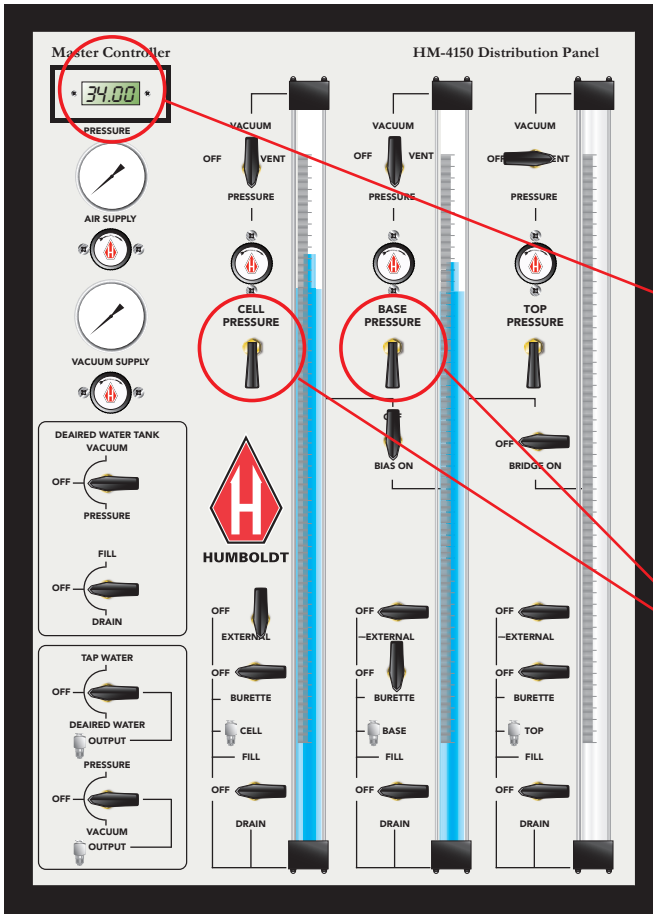
12



### STEP 13

- A. Flip the toggle below Base Pressure Regulator to the up position, then
- B. Adjust the Base Pressure Regulator to read 30 psi or to the next increment.

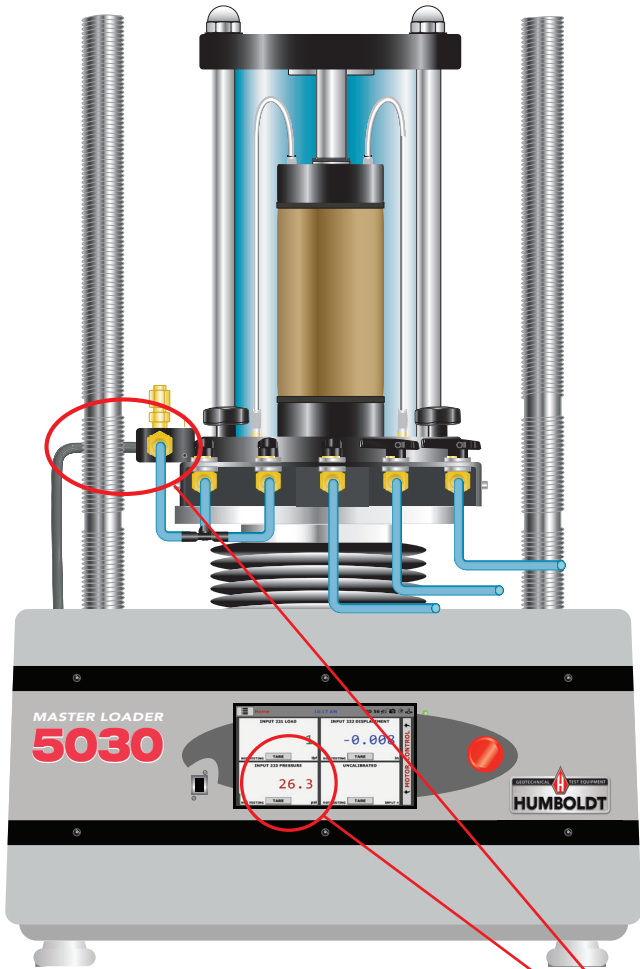




## STEP 14

- A. To check the resulting Cell Pressure in the Pressure window,
- B. Flip the Base Pressure Toggle down and Flip the Cell Pressure toggle up.

The Cell Pressure will be revealed. In this case, the Cell Pressure will read 33-35 psi (3-5 psi plus the next increment).



**STEP 15**

Record the Pore Pressure after approximately 2 minutes from the Pressure Transducer Readout.

**15**

### STEP 16

Calculate the Pore Pressure Parameter B Value:

$$B = \frac{\Omega_u}{\Omega_3}$$

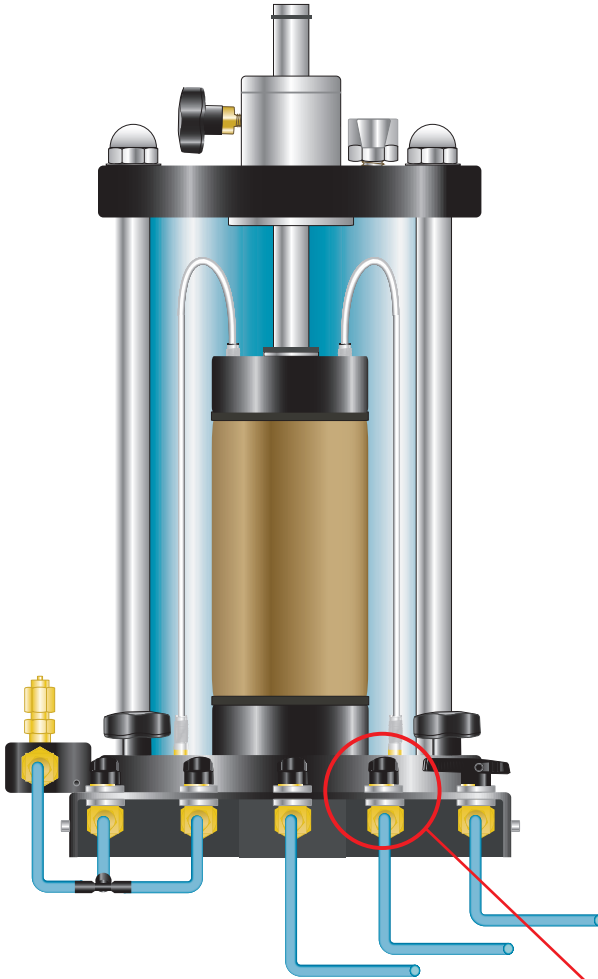
$$B = \frac{(26.3-20.0)}{(30-20)}$$

$$\mathbf{B = 0.63}$$

### STEP 17

If the B Value is equal to or greater than 0.95 then the specimen is considered to be saturated.

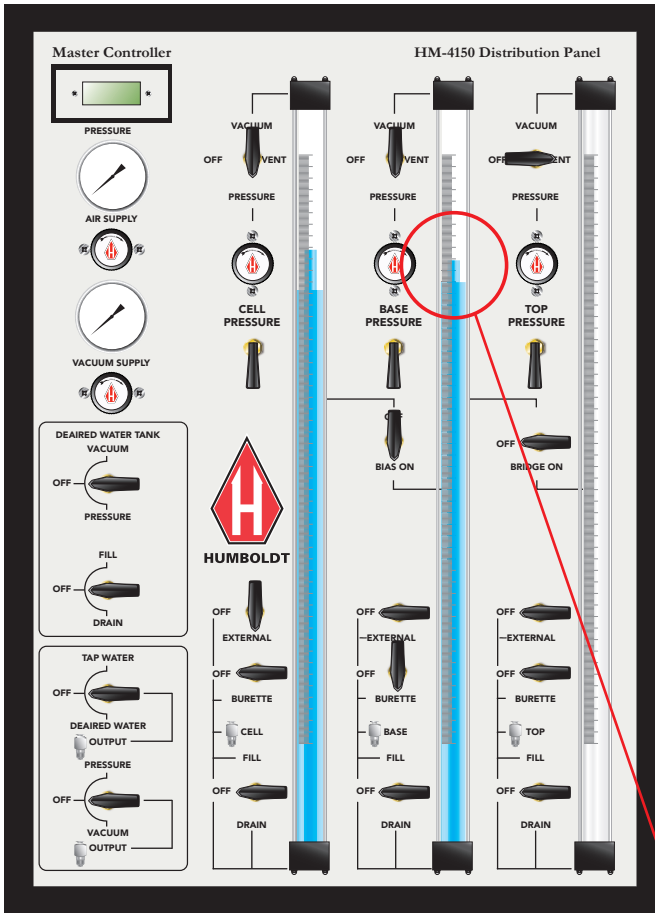
If it is not 0.95:



**STEP 18**

Open the Base Valve located on the right-hand side of the Triaxial Cell.

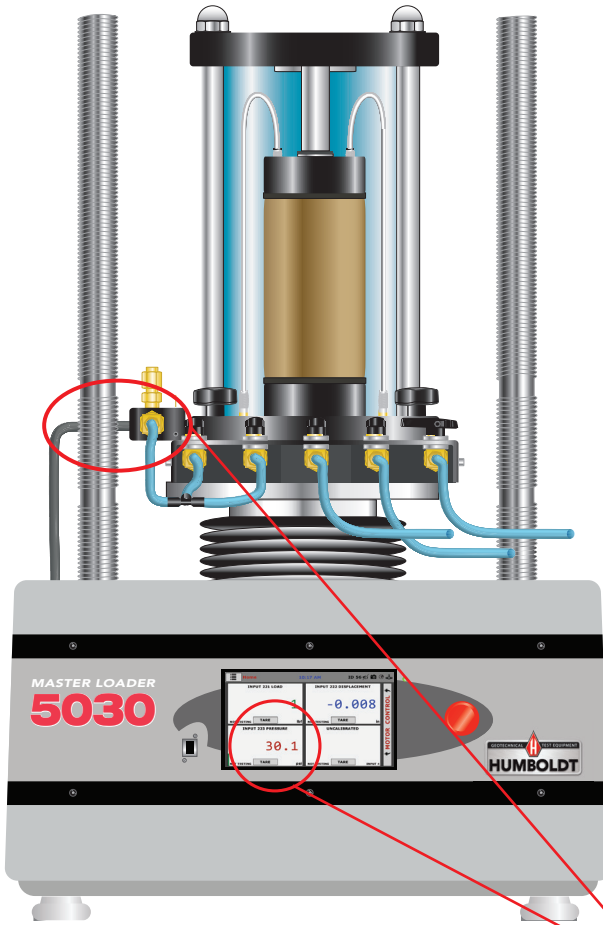
**18**



**STEP 19**

Record the Base Burette Level.

19



**STEP 20**

Readout of the Pressure Transducer should read approximately 30 psi.

Allow sufficient time for the pressure MASTER LOADER to stabilize.

20

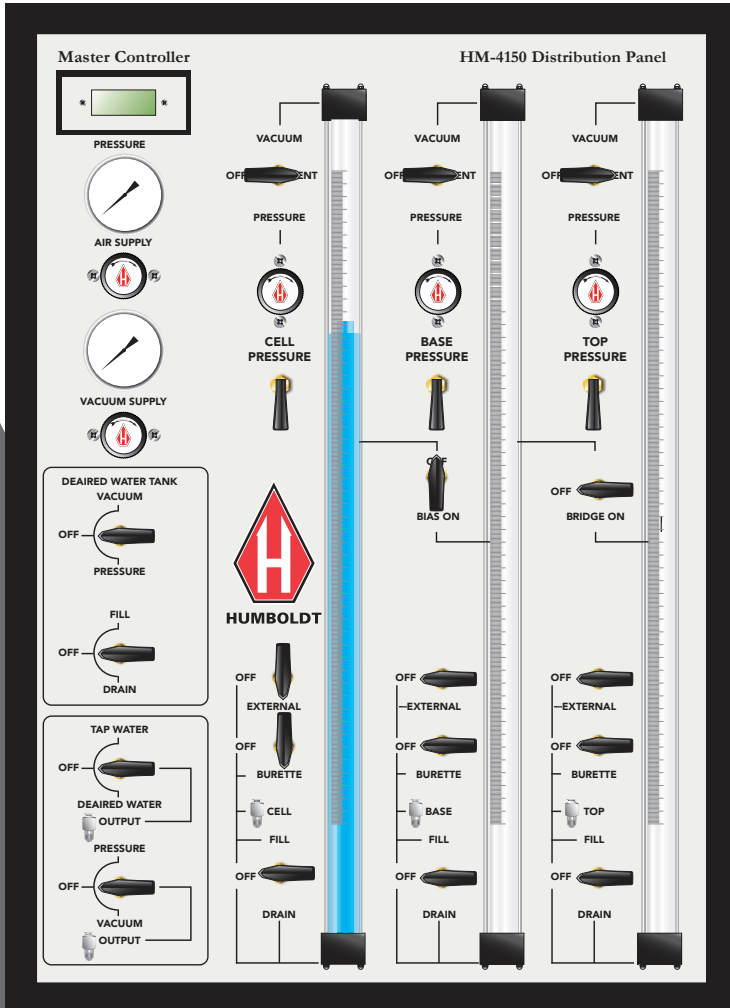
## **STEP 21**

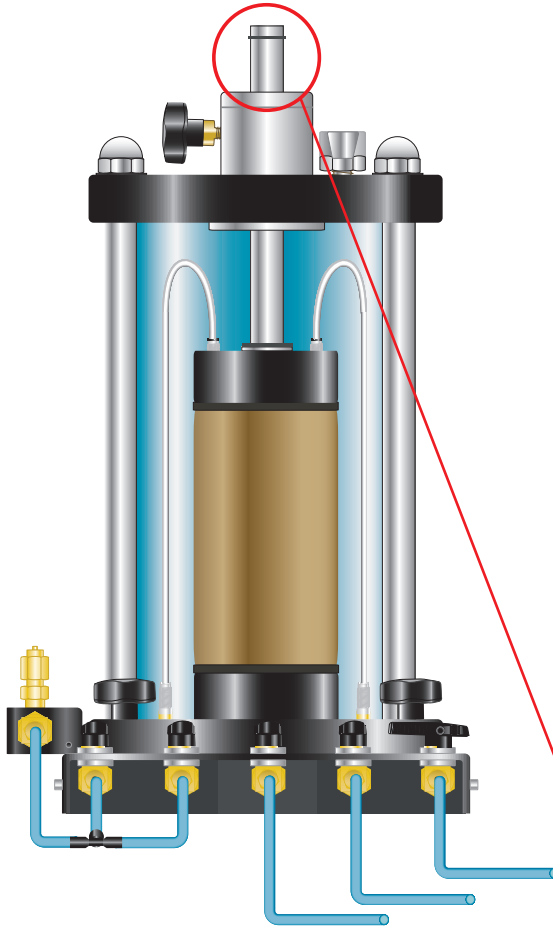
Repeat this process (steps 9 through 20) while increasing the pressure by 5-10 psi for each stage.





# Consolidation & Recording Volume

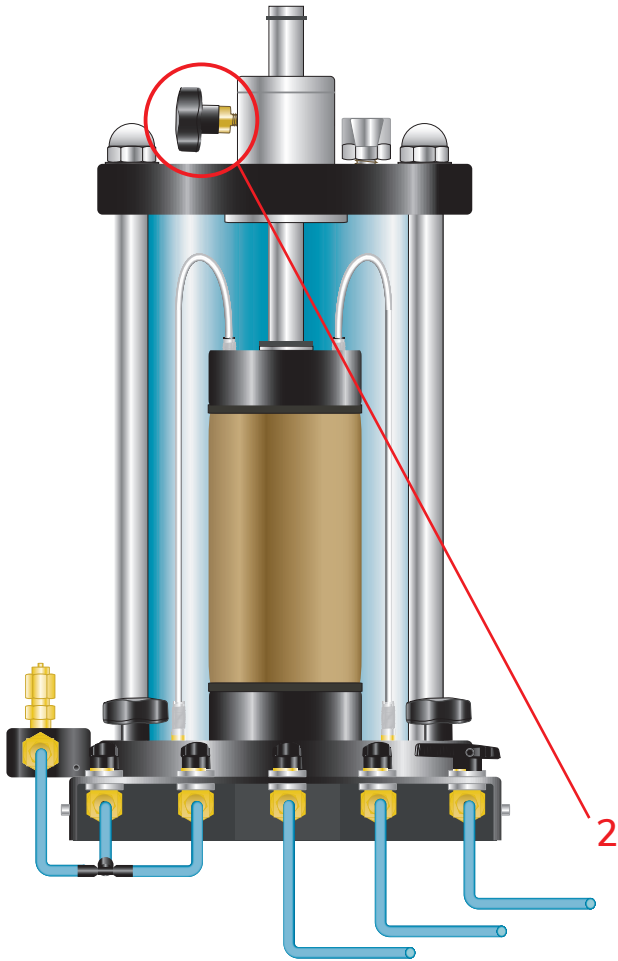




1

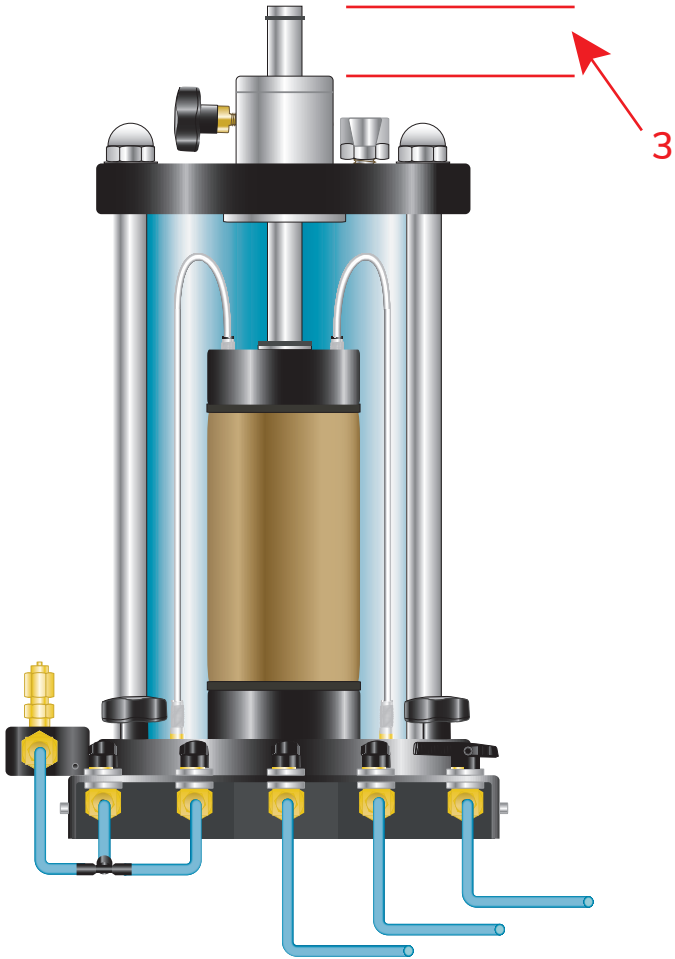
**STEP 1**

At the End of the Saturation Stage, bring the Triaxial Cell Piston into contact with the Specimen Top Cap without applying a load to the Specimen.



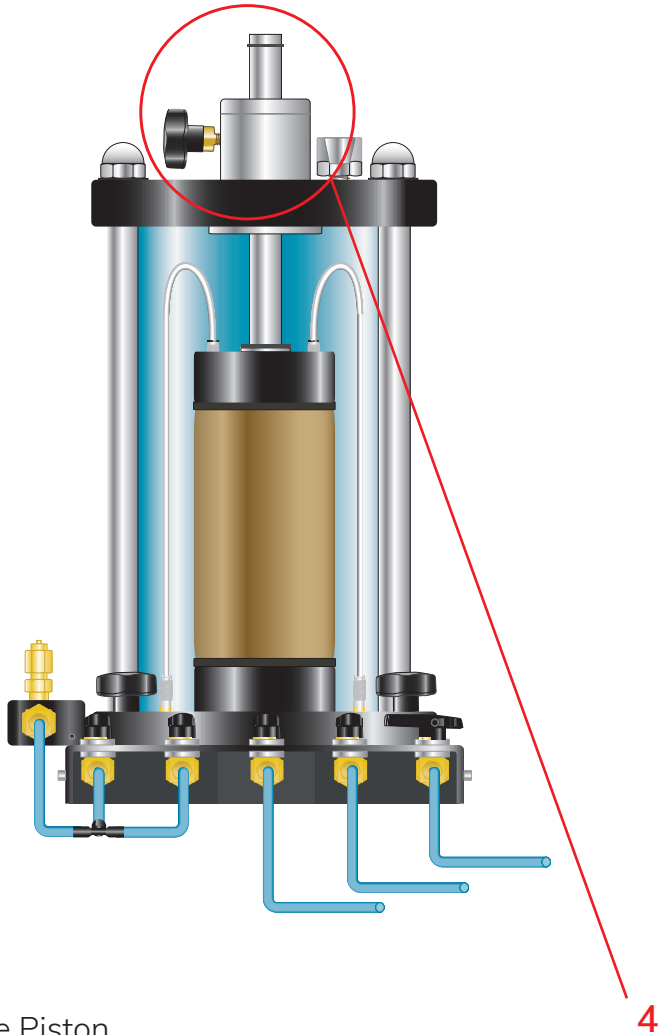
## STEP 2

Lock the Piston into position.



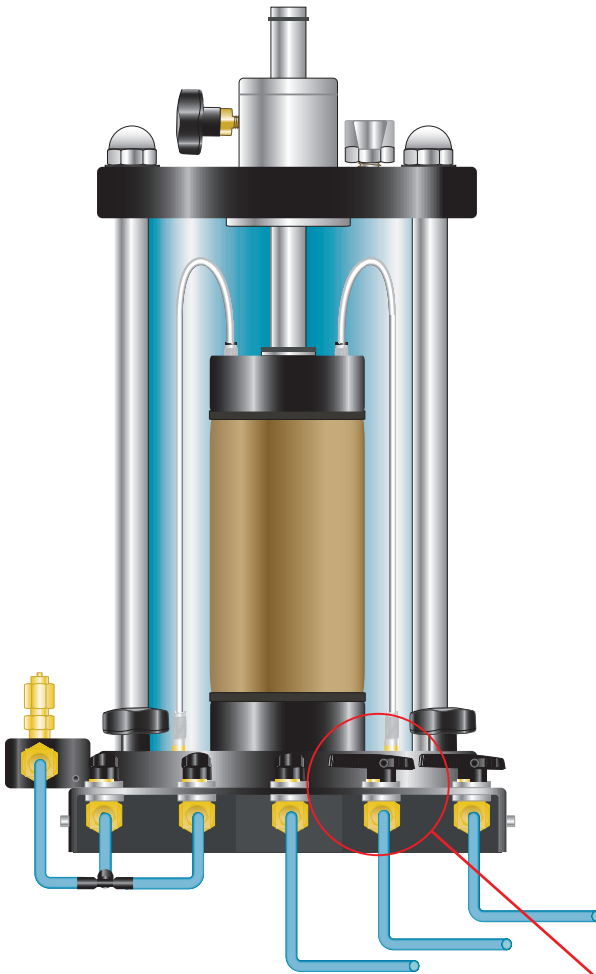
### STEP 3

Measure Specimen reference height prior to Consolidation.



## STEP 4

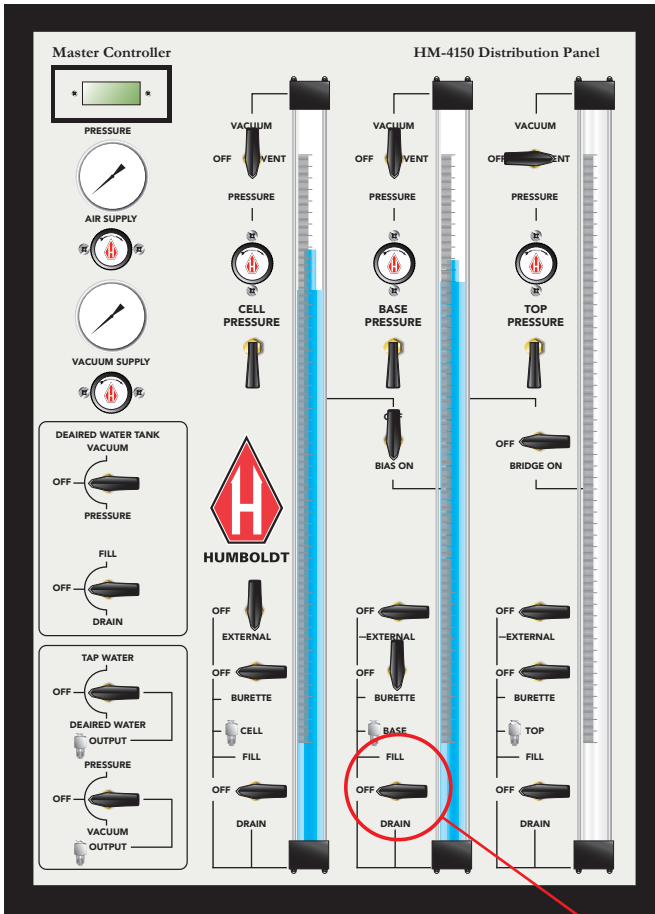
1. Unlock the Piston
2. Move the Piston up 1/8" (3mm)
3. Relock the Piston



**STEP 5**

Close the Base Valve located on the right-hand side of the Triaxial Cell.

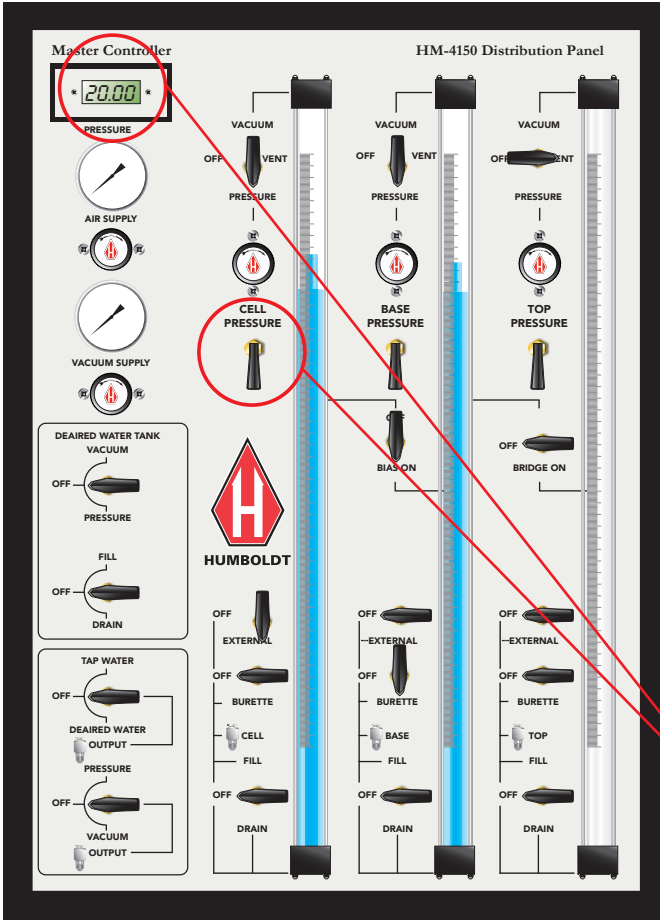
5



## STEP 6

**SLOWLY**, Turn the Valve towards DRAIN — the water level in the Burette will start dropping. When the water level approaches the 10cc mark, turn the Valve back to OFF.

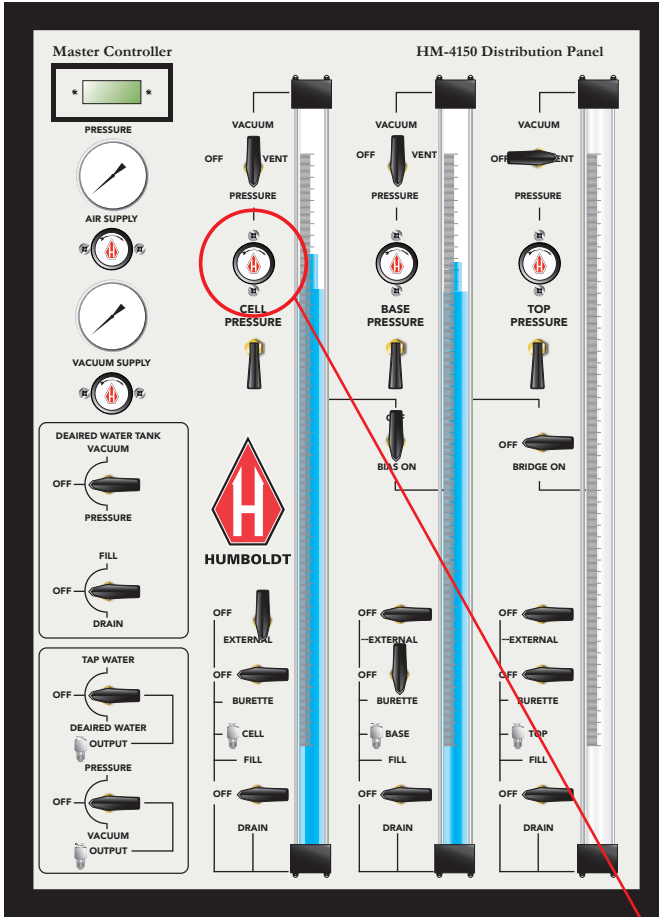
6



## STEP 7

Flip this toggle up, which will reveal the Cell Pressure in the Pressure window located at the top left corner of the HM-4150 Panel.



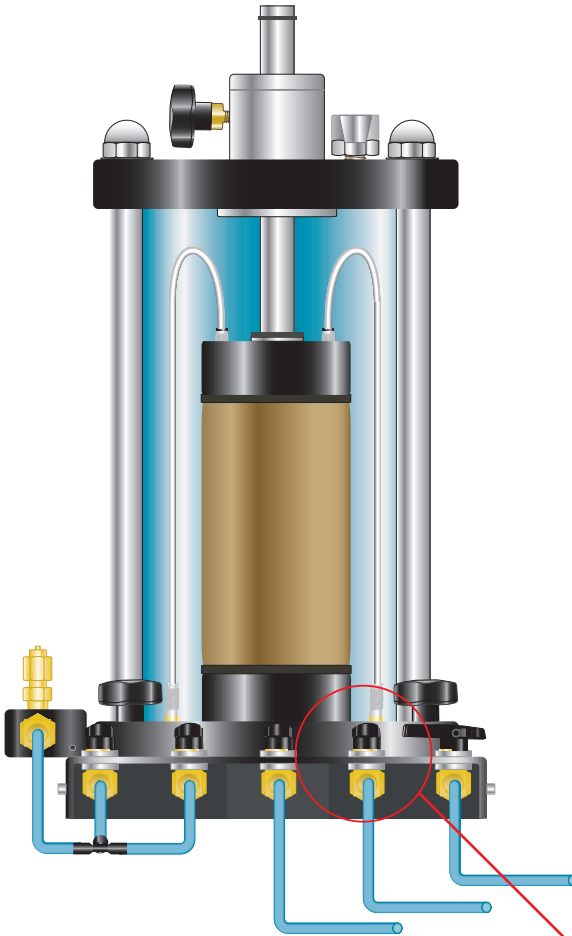


## STEP 8

Increase the Cell pressure to the required Effective Consolidation Pressure.

8

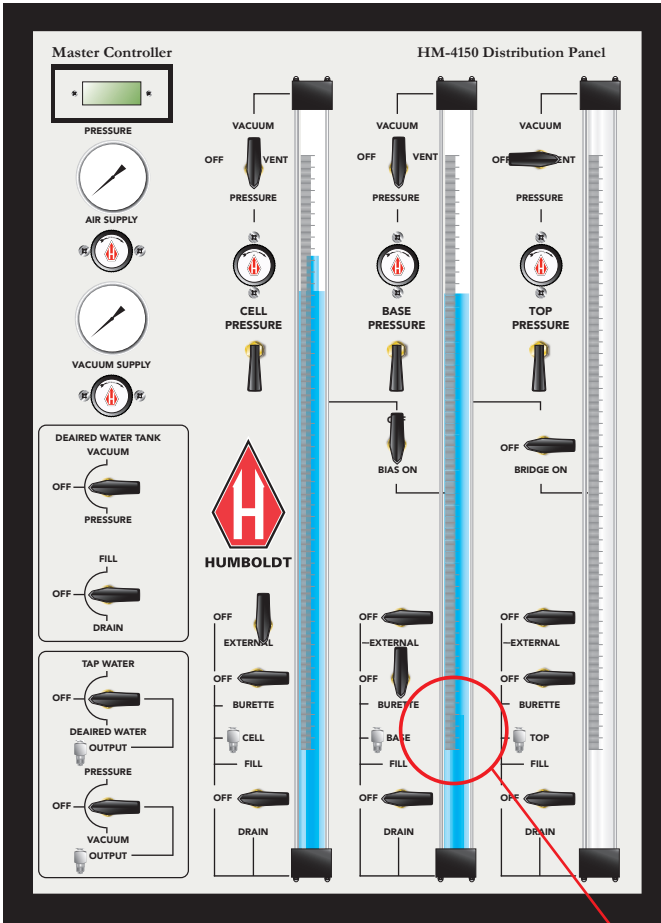
**NOTE:** Effective Consolidation Pressure = Cell Pressure – Base Pressure.



**STEP 9**

While watching the Base Burette levels on the HM-4150 Panel, Open the Base Valve located on the right-hand side of the Triaxial Cell and begin recording the Volume Change of the HM-4150 Panel Base Burette.

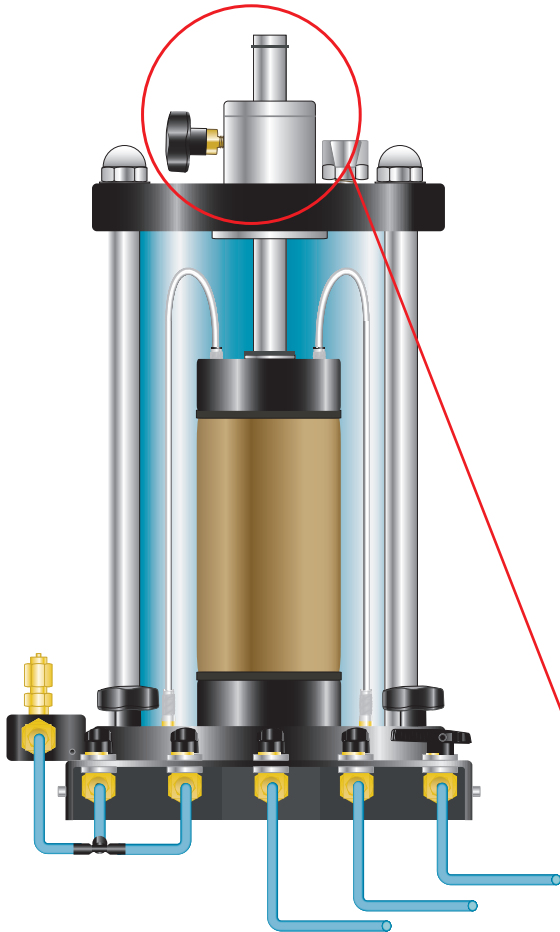
9



## STEP 10

Record the Volume Changes of the Base Burette Level at intervals of elapsed time, such as: 0.1, 0.2, 0.5, 1, 2, 4, 8, 15 and 30 minutes, and at 1, 2, 4, 8 hours and so forth.

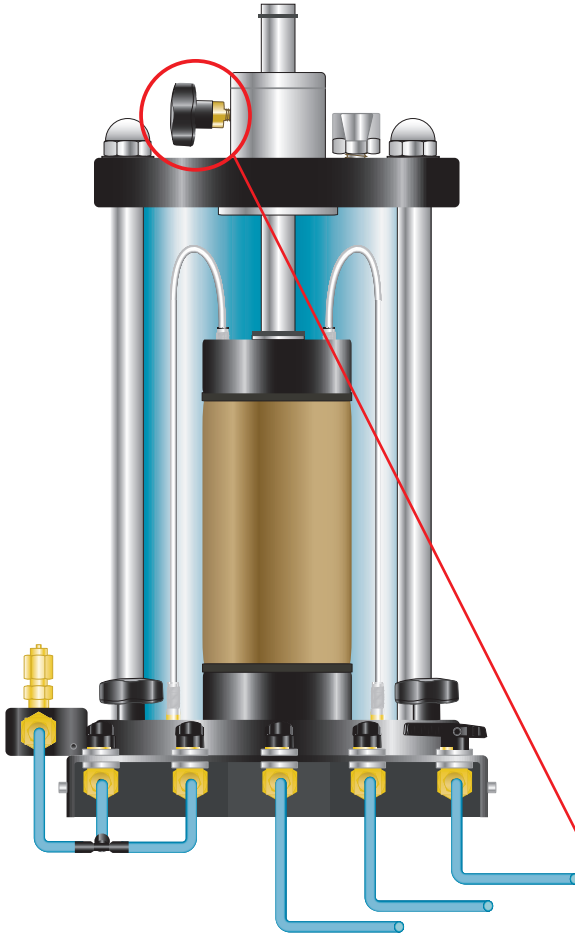
10



**STEP 11**

At the End of the Consolidation Stage, bring the Triaxial Cell Piston into contact with the Specimen Top Cap without applying a load to the Specimen.

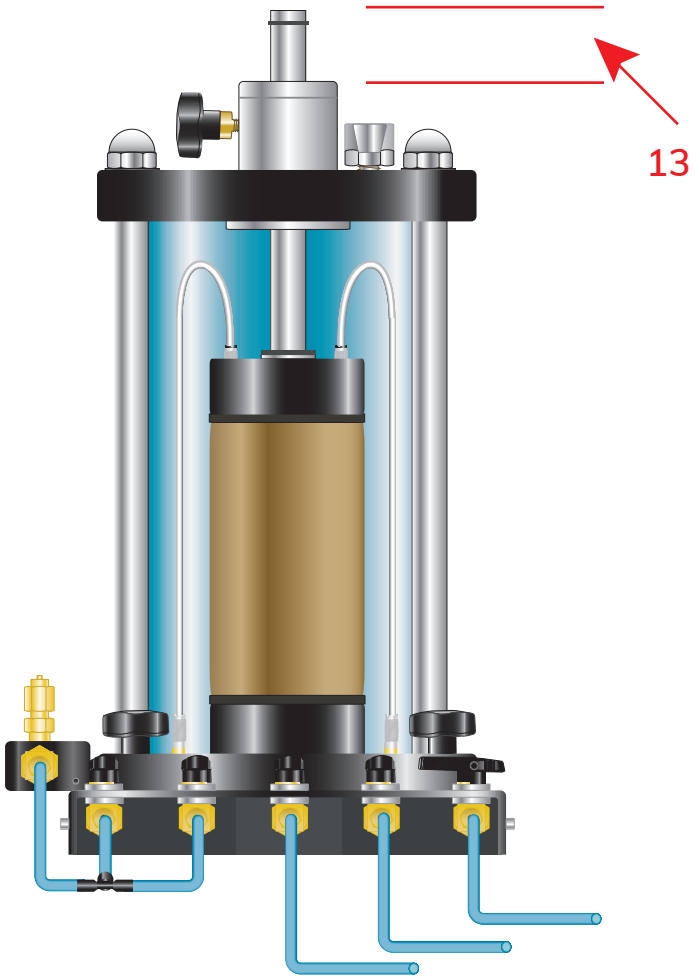
**11**



**STEP 12**

Lock the Piston into position.

**12**



### STEP 13

Measure Specimen reference height prior to Shear Stage.



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