

Accu-Max+

Configuration Tool Instructions

1 Before you Begin

Carefully read this instruction manual before using this product. If anything is unclear, please contact MEC or BASE Engineering for support.

General Warnings for the Accu-Max+ Digital Dial:

- Accu-Max+ should be serviced by qualified, trained personnel only. Attempting to remove the cover or disassemble the device could expose you to dangerous high voltage points.
- Do not attempt to install or operate a damaged device. If the unit has been exposed to excessive amounts of water, shows evidence of physical damage, or is not operating properly, unplug it from the power source and contact qualified service personnel.
- Use of thread-locking compounds, such as Loctite, may cause serious damage to plastic enclosures. Many thread-locking compounds are not compatible with thermoplastics and can lead to stress-cracking.
- All other warnings for the installation of a Digital Dial are covered in the Installation and Operation Manual for the Accu-Max+ Digital Dial Form #1173.



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2 Accu-Max+ Configuration Tool Components and Connections

1. The following items are located within the Configuration Tool Assembly:



*Software File on
USB Flash Drive*



*Power/Computer
Cable*



Power Supply



*Power Conditioning Module
(PCM)*



*Dial Communication
Cable*

2. Make sure that the Power Supply is charged by attaching the 110v Adapter to the power cell and charging it sufficiently.



3. Insert the USB Drive into your Windows Computer and locate the new drive inside Windows Explorer. The Accu-Max+ Configuration Tool may be run directly from the USB Drive or from your PC by copying *all files and directories* into a dedicated folder on your PC or Server.
4. Attach the system in the following manner:
 - a. Insert the Power/Computer Cable (Grey End) into the Grey Receptacle on the Power Conditioning Module. Insert the Dial Communication Cable (Black End) into the Black Receptacle on the Power Conditioning Module. These connections are “keyed” and cannot be installed incorrectly or backwards.

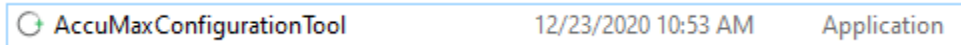


- b. Connect the Dial Communication Cable to the Accu-Max+ Digital Dial.
- c. Connect the Power/Computer Cable USB connection to a USB port on your computer.
- d. Connect the Power Supply to the Power/Computer Cable using the supplied connector.
- e. Turn the Power Supply on, and the Accu-Max+ Digital Dial should turn on. If the dial does not turn on, check that the power supply is fully charged.
- f. Once this set-up is complete, the software can be opened on the computer and the Accu-Max+ Digital Dial is ready for programming.

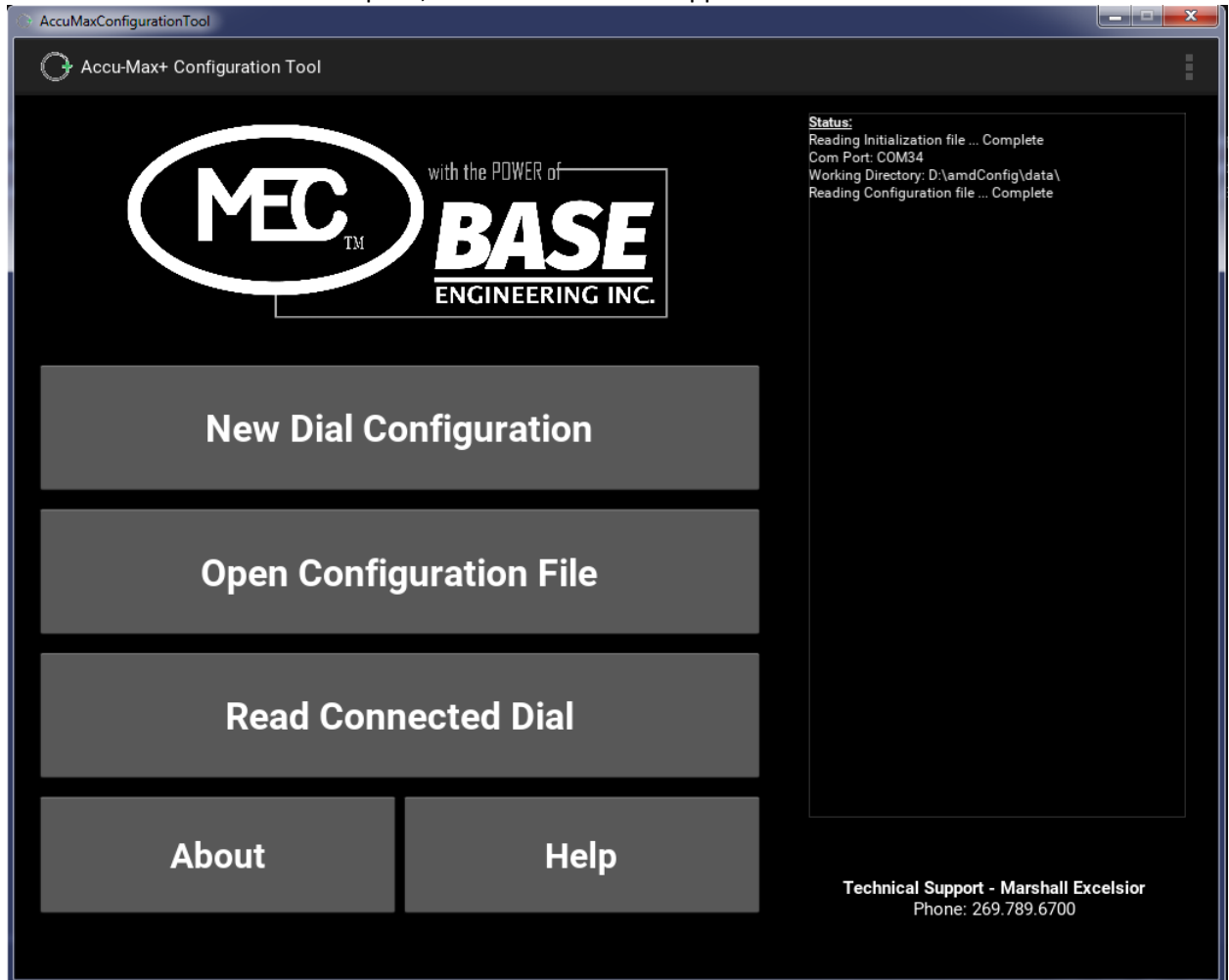


3 Using the Accu-Max+ Configuration Tool Software

1. To get into the software, click on the application file:

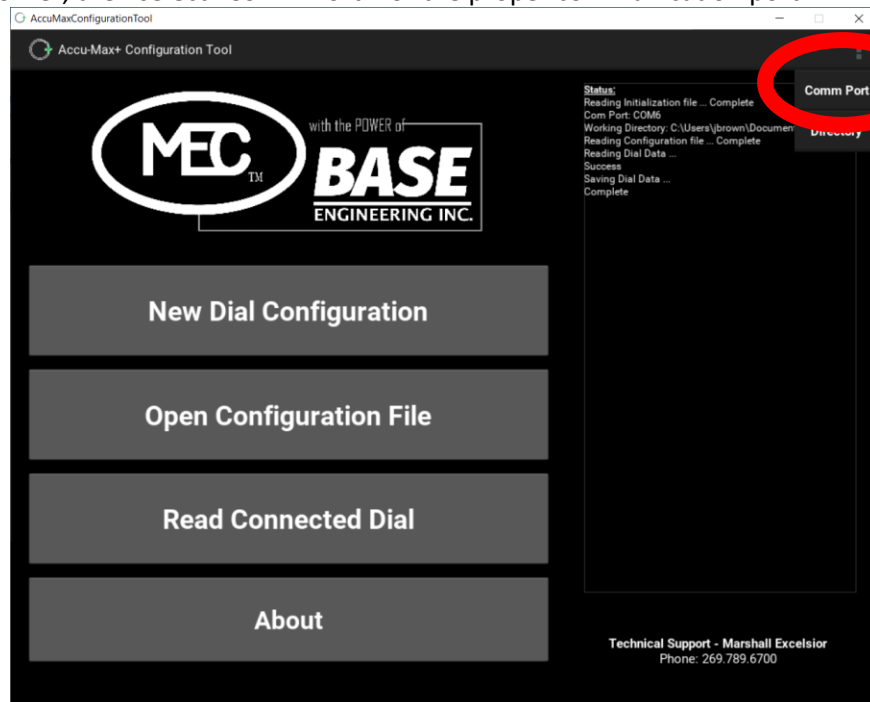


2. When the file is selected and opens, the main screen will appear:

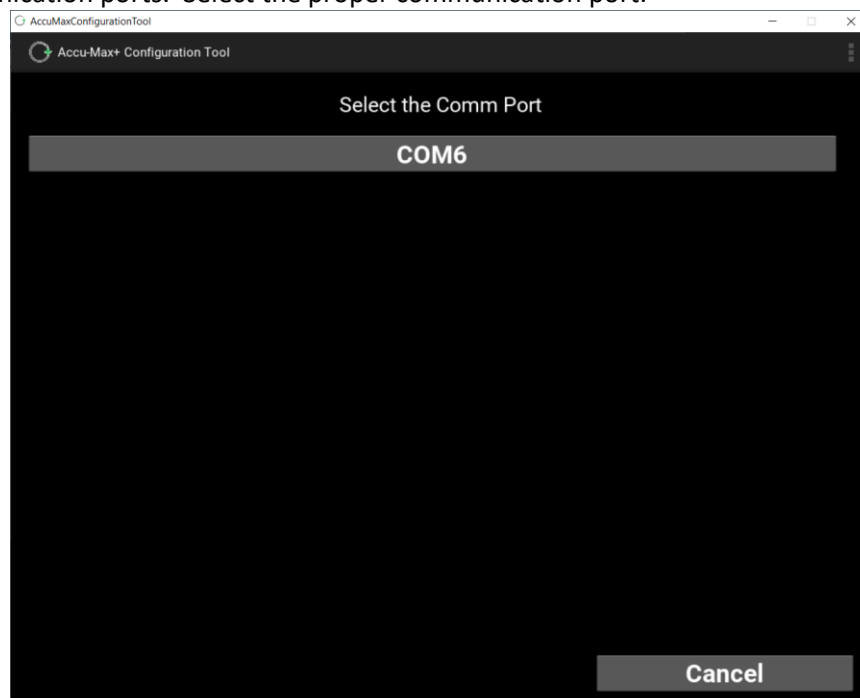


4 Selecting the Communication Port

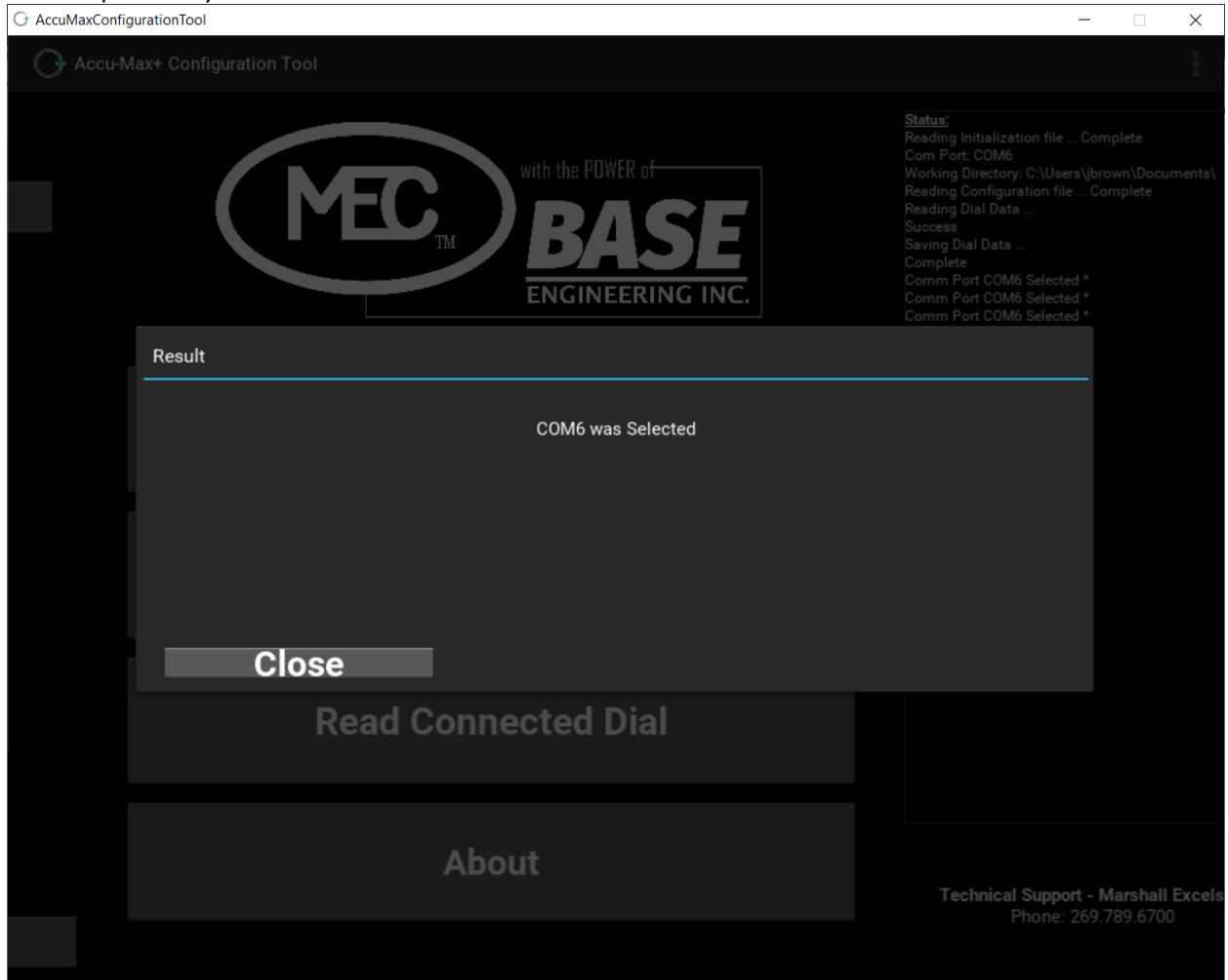
1. From the main screen (or any of the following screens), select the three dots in the upper right hand corner, then select “Comm Port” for the proper communication port.



2. When the “Comm Port” is selected, the following screen will appear with the available communication ports. Select the proper communication port.



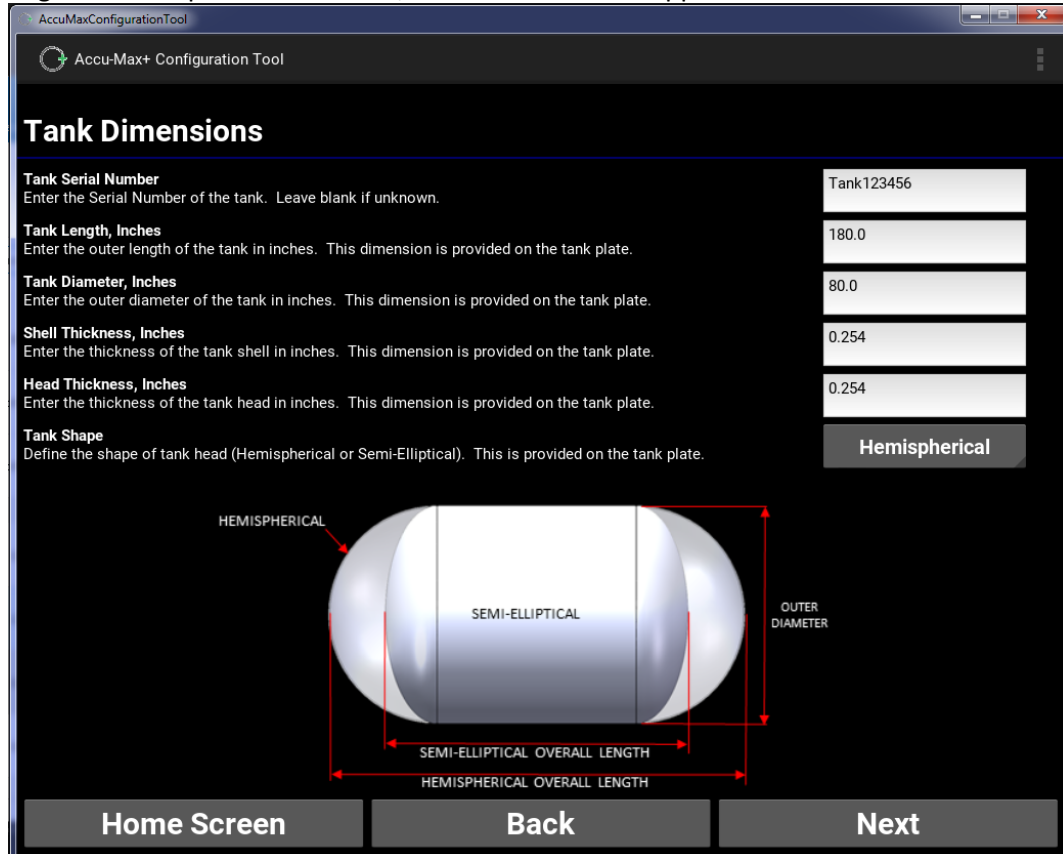
3. A window will appear verifying which communication port was selected. Click “Close” and perform your desired task.



4. After the “Comm Port” has been selected, verify that the correct communication port has been selected by connecting the dial to the cable and selecting “Read Connected Dial” from the Main Screen. See Section 7 for the instructions of reading a connected dial.

5 New Dial Configuration

1. To program a new dial, go to the Main Screen and select the “New Dial Configuration” tab by clicking the box. Upon this selection, the next screen will appear:



Tank Dimensions

Tank Serial Number
Enter the Serial Number of the tank. Leave blank if unknown.

Tank Length, Inches
Enter the outer length of the tank in inches. This dimension is provided on the tank plate.

Tank Diameter, Inches
Enter the outer diameter of the tank in inches. This dimension is provided on the tank plate.

Shell Thickness, Inches
Enter the thickness of the tank shell in inches. This dimension is provided on the tank plate.

Head Thickness, Inches
Enter the thickness of the tank head in inches. This dimension is provided on the tank plate.

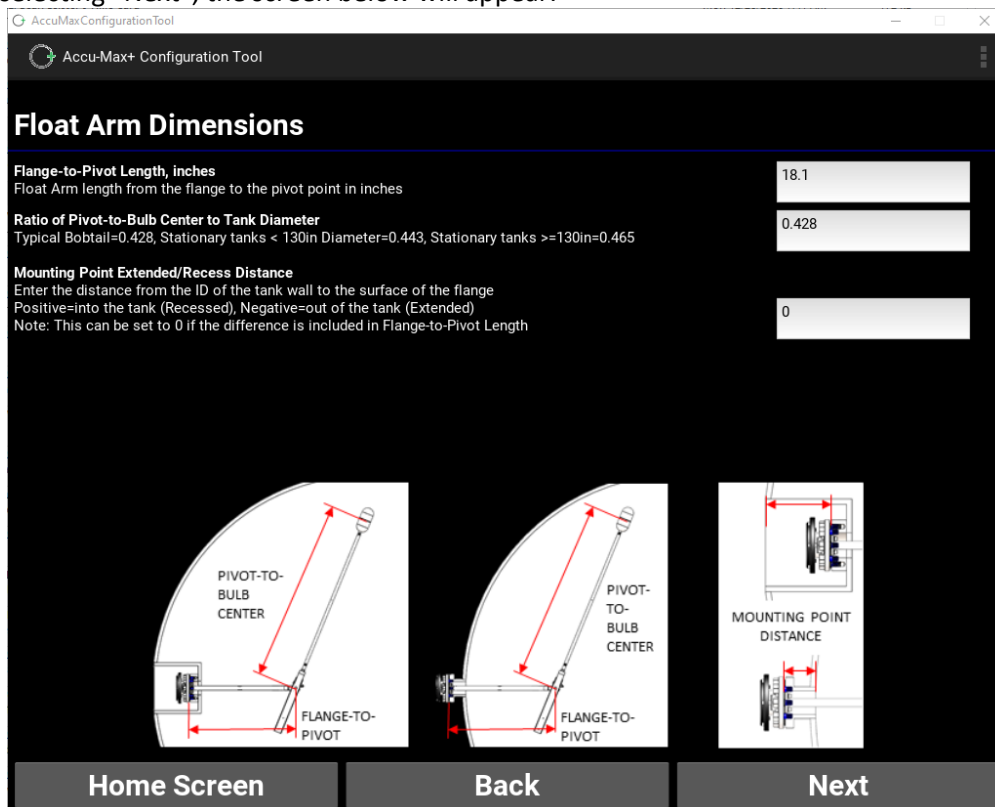
Tank Shape
Define the shape of tank head (Hemispherical or Semi-Elliptical). This is provided on the tank plate. Hemispherical

Diagram illustrating Tank Dimensions:
 - HEMISPHERICAL (indicated by a red arrow pointing to the hemispherical head)
 - SEMI-ELLIPTICAL (indicated by a red arrow pointing to the semi-elliptical head)
 - OUTER DIAMETER (indicated by a red arrow pointing to the diameter of the tank body)
 - SEMI-ELLIPTICAL OVERALL LENGTH (indicated by a red arrow pointing to the length of the semi-elliptical head)
 - HEMISPHERICAL OVERALL LENGTH (indicated by a red arrow pointing to the length of the hemispherical head)

Home Screen **Back** **Next**

2. On this screen, enter the following information:
 - a. Tank Serial Number: If known, enter the tank serial number. If unknown, this field can be left blank.
 - b. Tank Length, inches: Enter the outer overall tank length in inches.
 - c. Tank Diameter, inches: Enter the outer diameter of the tank in inches.
 - d. Shell Thickness, inches: Enter the thickness of the tank shell in inches.
 - e. Head Thickness, inches: Enter the thickness of the tank head in inches.
 - f. Tank Shape: From the pull down menu, select if the tank is either hemispherical or semi-elliptical, as shown in the representative figure at the bottom of the screen.
3. After entering this information, select the “Next” button.
 - a. (If at any point previously entered information needs to be adjusted/corrected, the “Back” button can be selected to perform this task on any of the screens.)

4. After selecting “Next”, the screen below will appear:



Float Arm Dimensions

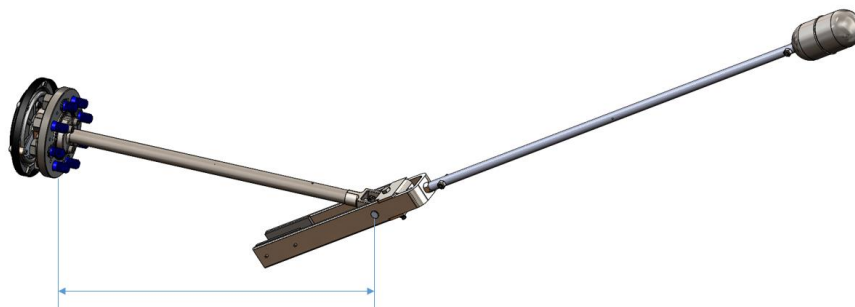
Flange-to-Pivot Length, inches
Float Arm length from the flange to the pivot point in inches

Ratio of Pivot-to-Bulb Center to Tank Diameter
Typical Bobtail=0.428, Stationary tanks < 130in Diameter=0.443, Stationary tanks >=130in=0.465

Mounting Point Extended/Recess Distance
Enter the distance from the ID of the tank wall to the surface of the flange
Positive=into the tank (Recessed), Negative=out of the tank (Extended)
Note: This can be set to 0 if the difference is included in Flange-to-Pivot Length

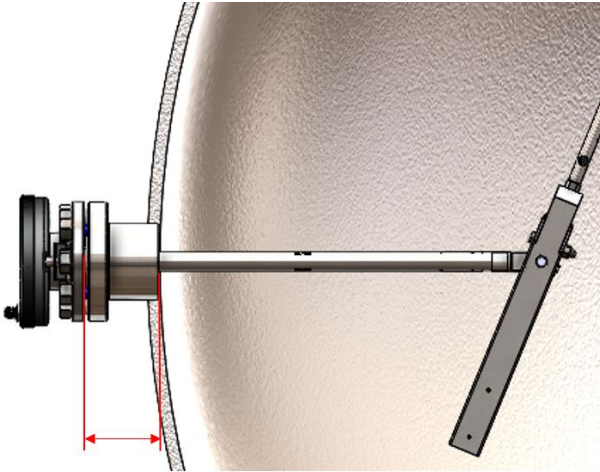
Home Screen **Back** **Next**

5. On this screen, enter the following information:
- Flange-to-Pivot Length, inches: Enter the length from the flange face to the pivot point of the float gauge in inches.
 - If you do not know this information, you can either reference the Table in Appendix A of this document, or measure the physical float gauge for this dimension. If this task cannot be accomplished, please contact MEC. For MEC to provide the information to you, you will need to have the part number of the float gauge.

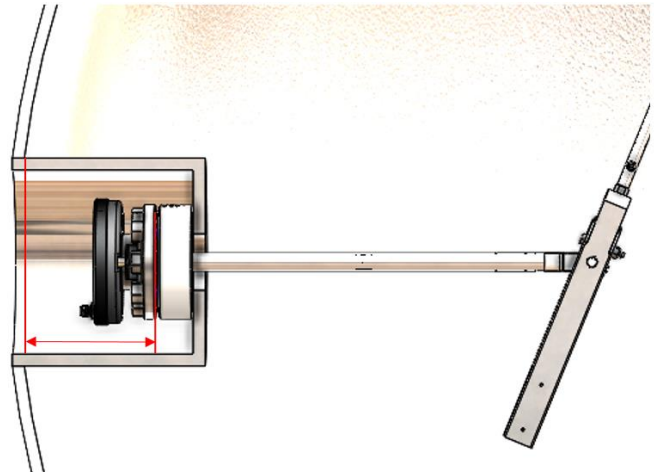


- Ratio of Pivot-to-Bulb Center to Tank Diameter: Select from one of the three options depending on the type of system that the float gauge is installed into
 - Typical Bobtail Tanks: Enter “0.428” in the field
 - Stationary Tanks that are less than 130 inches in Outer Diameter: Enter “0.433” in the field

- iii. Stationary Tanks that are greater than or equal to 130 inches in Outer Diameter:
Enter "0.465" in the field
- c. Mounting Point Extended/Recessed Distance, inches: Enter the distance from the ID of the tank wall to the location of the flange face in inches. If the dial is located outside of the tank (extended), the distance entered should be a negative number. If the dial is located inside the tank (recessed), the distance entered should be a positive number.

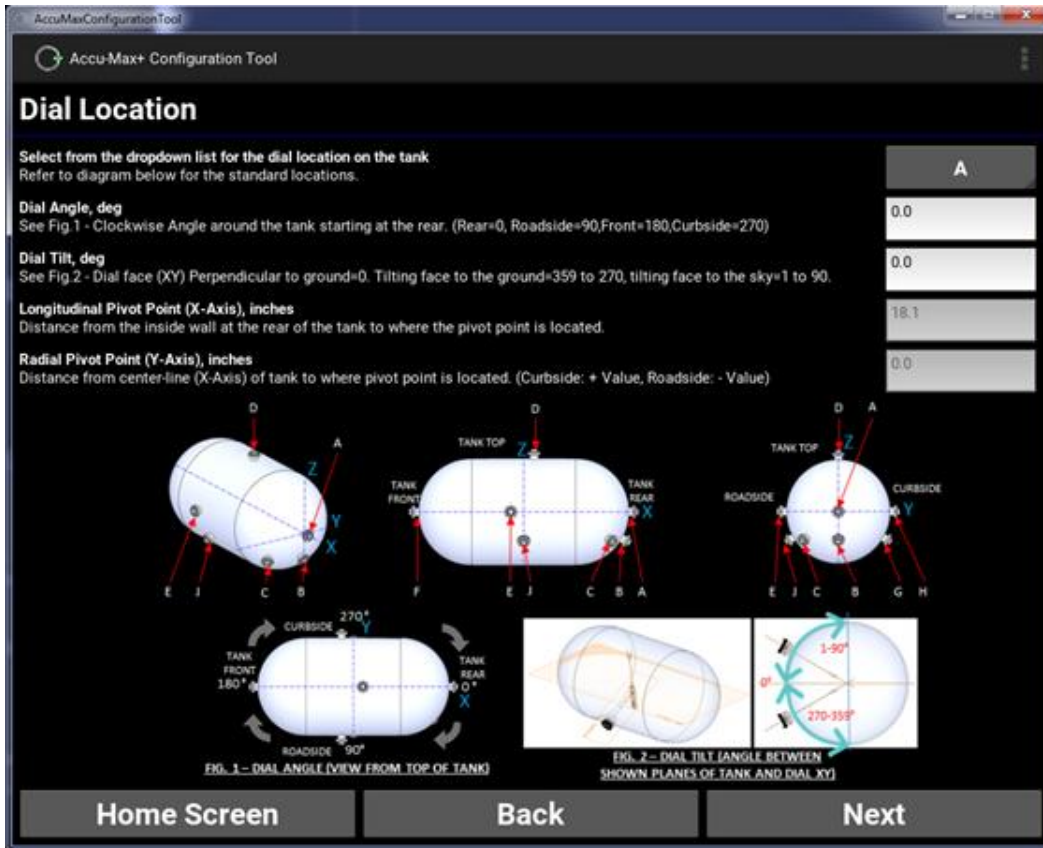


Negative Number Input (Extended)



Positive Number Input (Recessed)

- 6. After entering this information, select the "Next" button.
- 7. After selecting "Next", the screen below will appear:



Dial Location

Select from the dropdown list for the dial location on the tank. Refer to diagram below for the standard locations.

Dial Angle, deg
See Fig.1 - Clockwise Angle around the tank starting at the rear. (Rear=0, Roadside=90, Front=180, Curbside=270)

Dial Tilt, deg
See Fig.2 - Dial face (XY) Perpendicular to ground=0. Tilting face to the ground=359 to 270, tilting face to the sky=1 to 90.

Longitudinal Pivot Point (X-Axis), inches
Distance from the inside wall at the rear of the tank to where the pivot point is located.

Radial Pivot Point (Y-Axis), inches
Distance from center-line (X-Axis) of tank to where pivot point is located. (Curbside: + Value, Roadside: - Value)

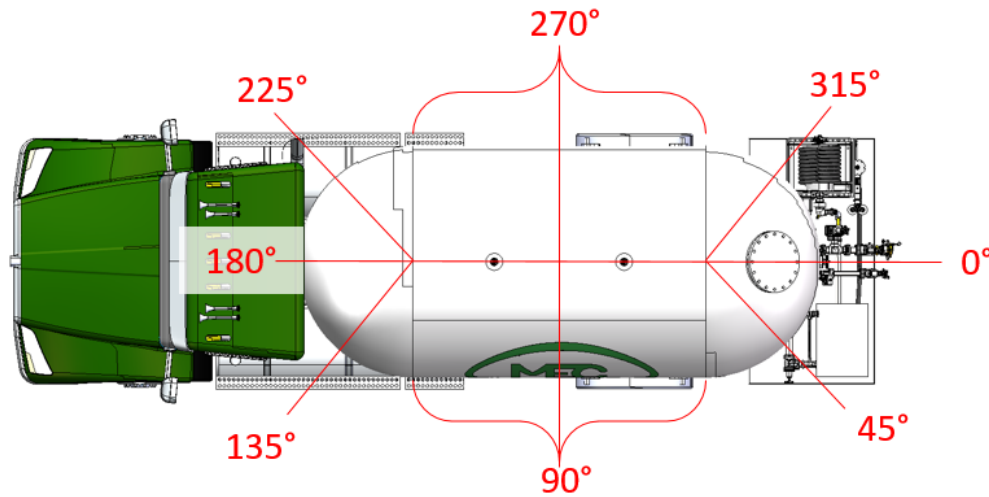
Fig. 1 - DIAL ANGLE (VIEW FROM TOP OF TANK)

Fig. 2 - DIAL TILT (ANGLE BETWEEN SHOWN PLANES OF TANK AND DIAL XY)

Fig. 3 - DIAL ANGLE (VIEW FROM TOP OF TANK)

Home Screen Back Next

8. On this screen, enter the following information:
 - a. Select from the dropdown list for the dial locations on the tank: Determine if the location of the dial fits in any of the options A through J as shown in the representations at the bottom of the screen. If so, select that tank dial location and nothing else is required on this screen. If not, select "Custom" and enter the information in the following fields.
 - i. The "Longitudinal Pivot Point (X-Axis), inches" and "Radial Pivot Point (Y-Axis), inches" input boxes are greyed out and not able to input information into for options A through J as this information is gathered from previous data entered into the configurator software. If the information needs to be altered from the standard selections, select "Custom" and the input boxes will become active again and then the custom information can be input into the software.
 - b. Dial Angle, deg: Enter the degree location for the dial location on the tank as shown below. When looking at the tank in an orientation that is "top-down" (or as if you are looking down on the tank from the sky and the view is parallel with the ground), this degree input starts at the rear of the tank at 0 degrees, and rotates clockwise around the tank.



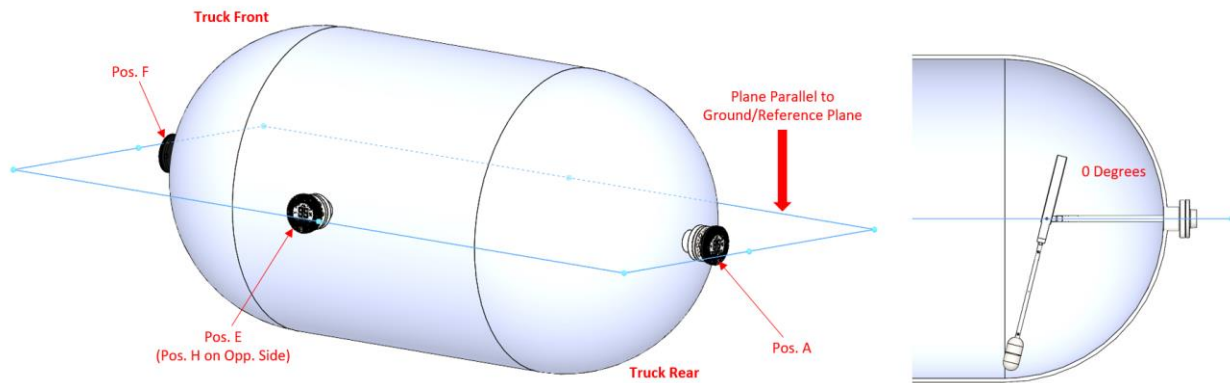
Bobtail Dial Angle Reference

- c. Dial Tilt, deg: Enter the degree location of the dial relative to the plane that is parallel to the ground, as shown below. This number can be between 0 to 90 degrees, or 270 to 359 degrees (this number can never be between 91 and 269 degrees, and it cannot be 360 degrees). If the float gauge is mounted parallel to the ground (which means the dial face is perpendicular to the ground), the input is 0 degrees. If the dial face is pointing up (toward the sky), then the number will be between 1 and 90 degrees. If the dial is pointing down (toward the ground), then the number will be between 270 and 359 degrees. See examples for the angle input on the next page.

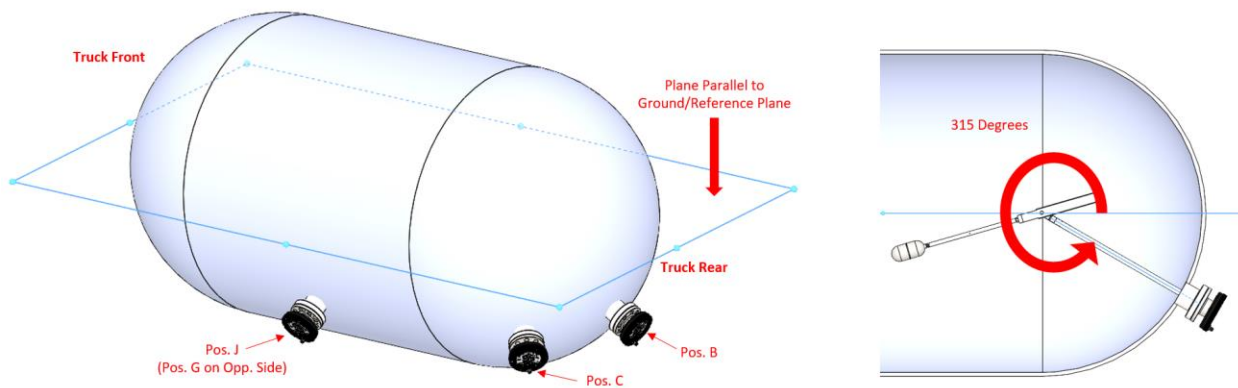
Examples for the degrees are shown here:



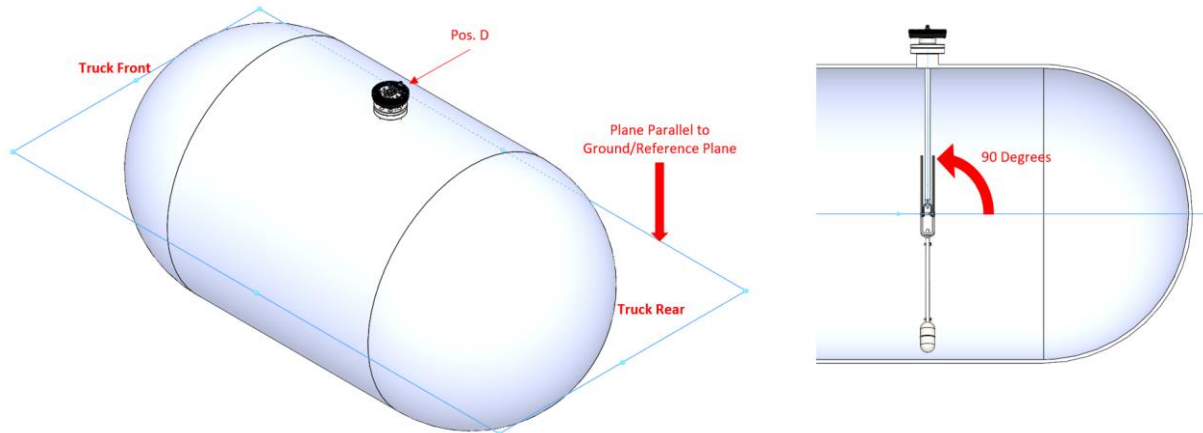
The following locations would have a 0 degree input:



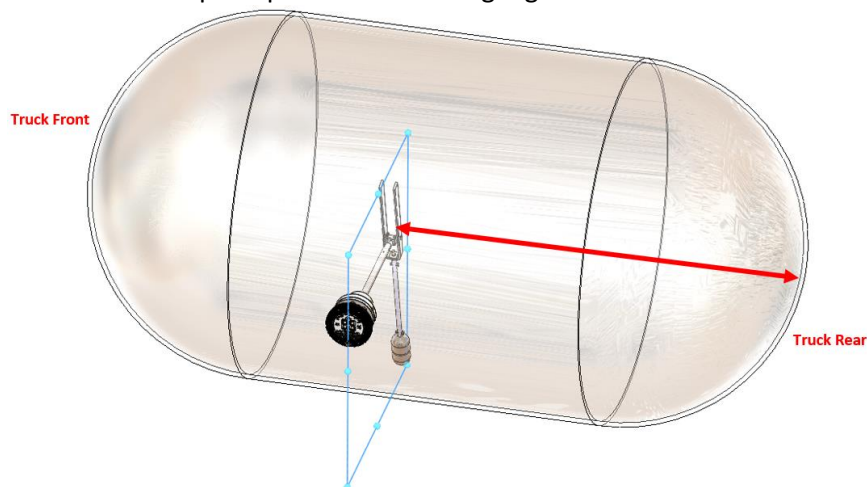
The following locations would have a 315 degree input:



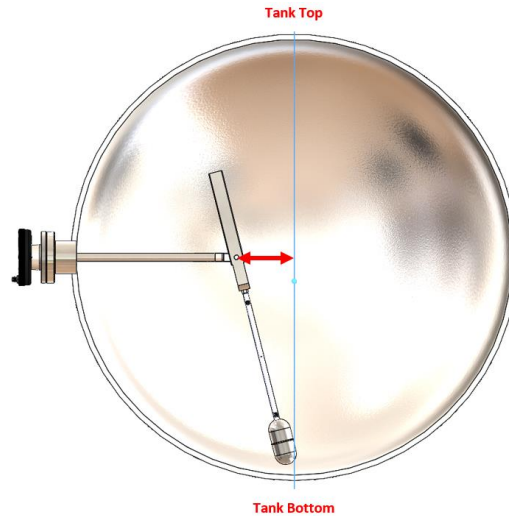
The following locations would have a 90 degree input:



- d. Longitudinal Pivot Point (X-Axis), inches: **This is only entered in CUSTOM set-up, otherwise it defaults to standard information gathered from previous entries in the configurator software.** For CUSTOM set-up's, enter the distance from the inside wall of the tank to the pivot point on the float gauge in inches.



- e. Radial Pivot Point (Y-Axis), inches: **This is only entered in CUSTOM set-up, otherwise it defaults to standard information gathered from previous entries in the configurator software.** For CUSTOM set-up's, enter the distance from the center-line of the tank to the pivot point on the float gauge in inches. If the float gauge pivot point is directly in line with the centerline of the tank, this input is 0 inches.



9. After entering this information, select the “Next” button.

10. After selecting “Next”, the screen below will appear:



11. On this screen, enter the following information:

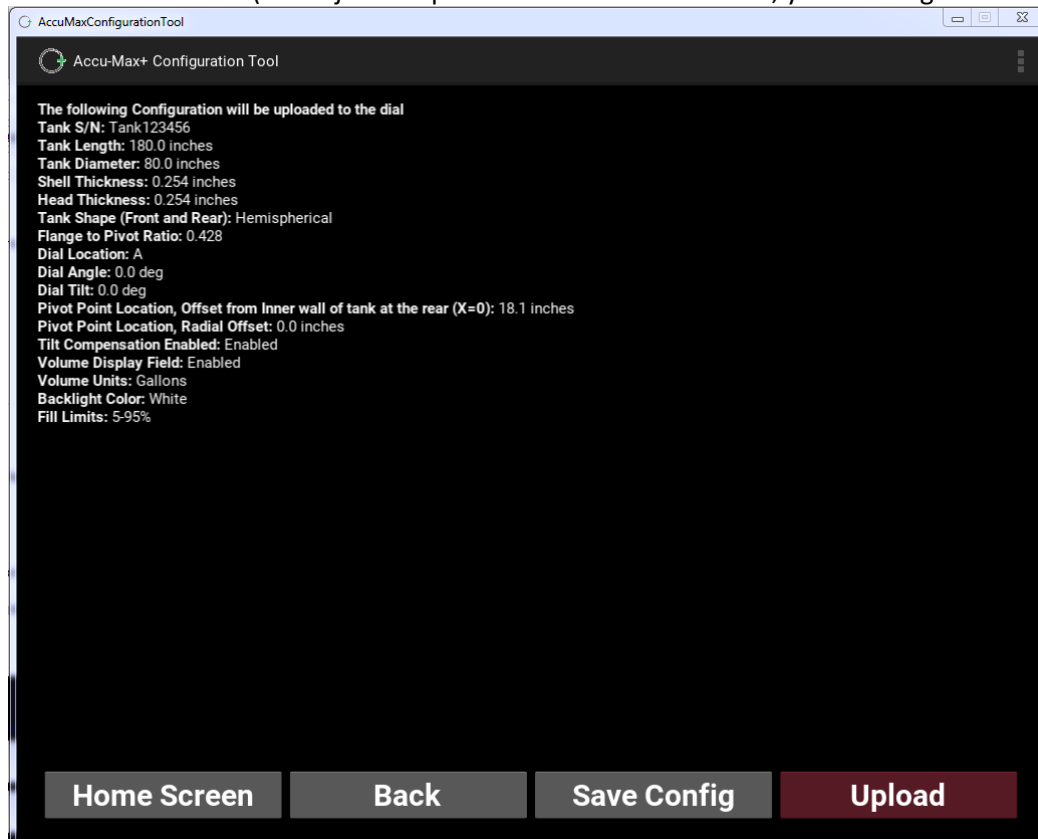
- Fill Limits: Select either 5-95% or 3-97% fill limits for the tank from the dropdown list.
- Activate Tilt Compensation: Select either Enabled or Disabled to allow or not allow tilt compensation to be activated for the tank from the dropdown list, respectively.



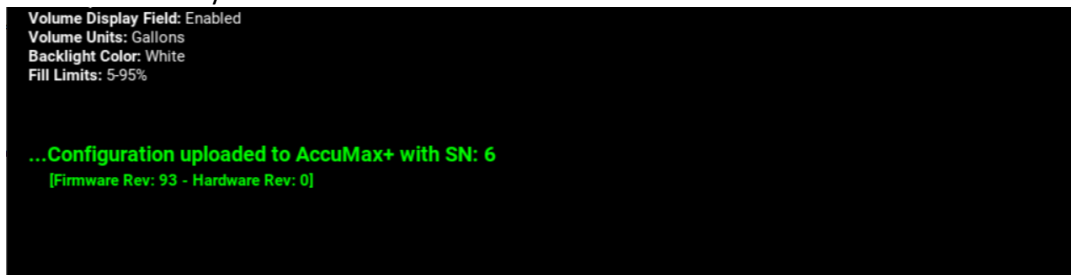
ACCU-MAX+ SERIES

- c. Activate the volume display on the dial: Select either Enabled or Disabled to allow or not allow the volume display to be shown on the dial from the dropdown list, respectively.
 - d. Volume Units: Select either Gallons or Liters to be displayed on the dial for the base unit of volume in the tank from the dropdown list.
 - e. Backlight Color: Click on the color desired for the backlight of the dial. When the color is clicked on, the reference for what color is selected is shown in the result field (shown as "White" in the example above).
12. After entering this information, select the "Confirm & Program" button.

13. After selecting “Confirm & Program”, the screen below will appear, which recaps all of the information entered (this is just a representative information set, your set might be different):

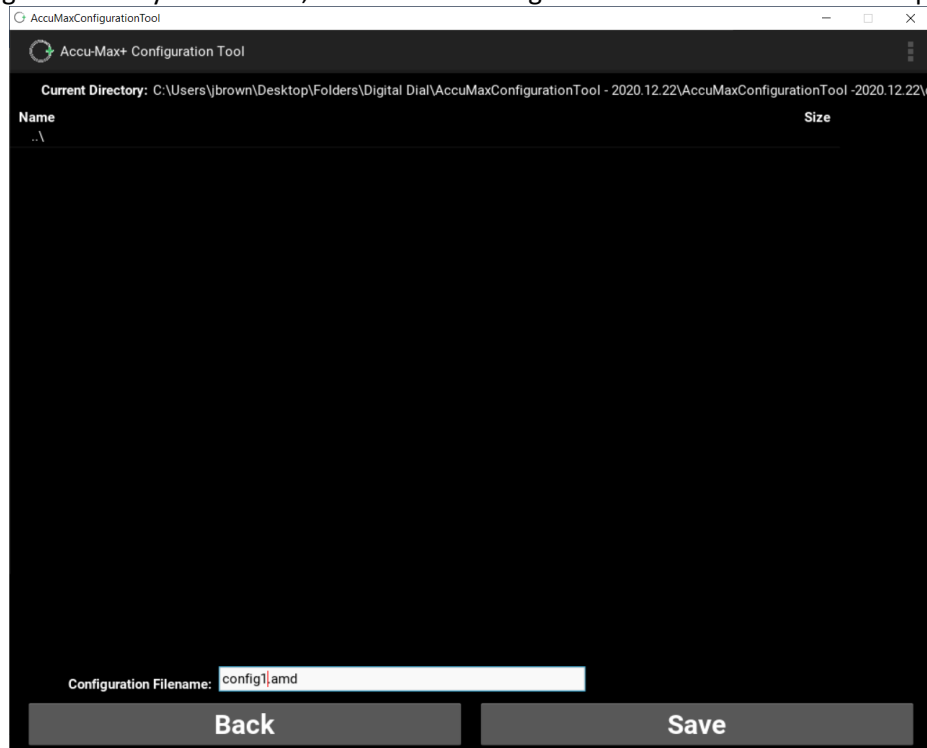


14. If all of the information on this screen appears correct, there are two options:
- To upload this configuration to a Accu-Max+ Digital Dial, make sure the dial is connected to the computer as described in Section 2 and select the “Upload” button. When “Upload” is selected, the USB connector will flash lights and the PCM will flash a light next to “Activity”. Once these items are done flashing, the screen will confirm that the configuration has been uploaded to the Accu-Max+ Digital Dial. Additionally, after the dial has been programmed, a date stamped log file is automatically stored in the “\data” directory.

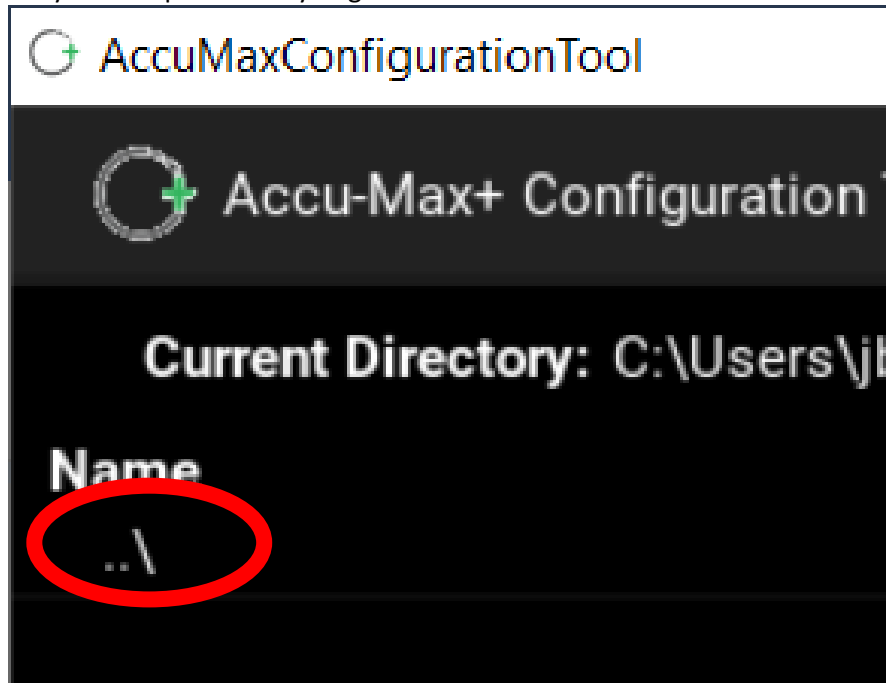


- If you would like to save this configuration set-up for programming other dials or for a back-up, you can select “Save Config”. The steps to doing this are shown in the next step.

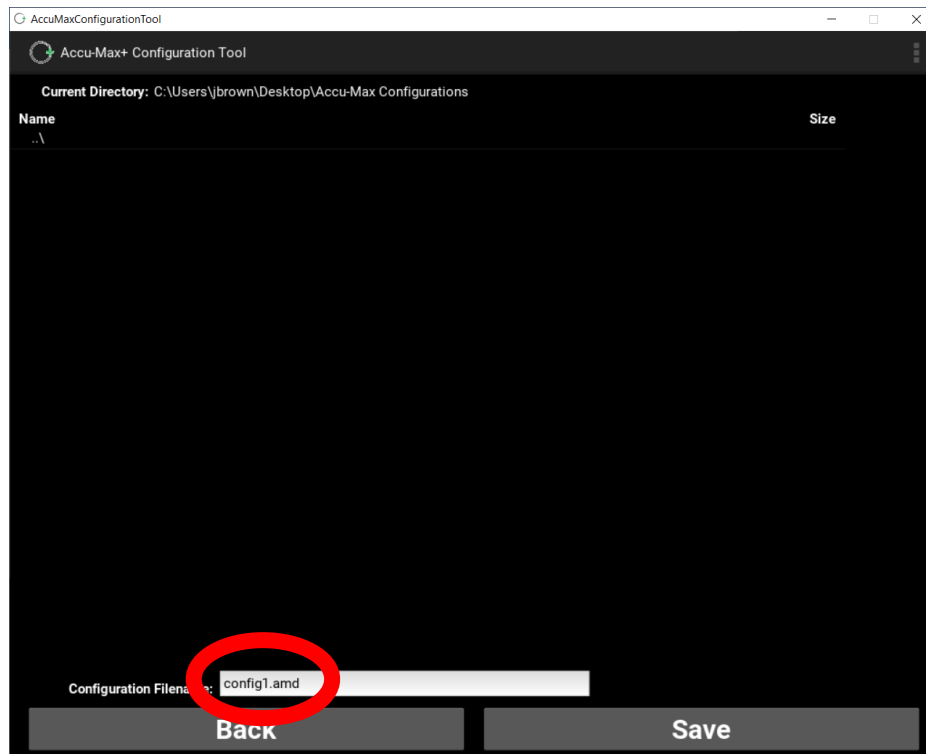
15. If you would like to save the dial configuration to upload to a different dial or have the configuration for your records, select “Save Config”. The screen below will then appear:




16. To select the location (folder) where the file is to be saved if it is not the “Current Directory” shown, click on the Backslash item under the “Name” (shown as ..\) and move through the folders on your computer until you get to the location desired.



17. Once the folder is selected, you can change the file name by clicking in the cell next to “Configuration Filename” and changing it to the desired file name.
 - a. This file must remain an “.amd” file.

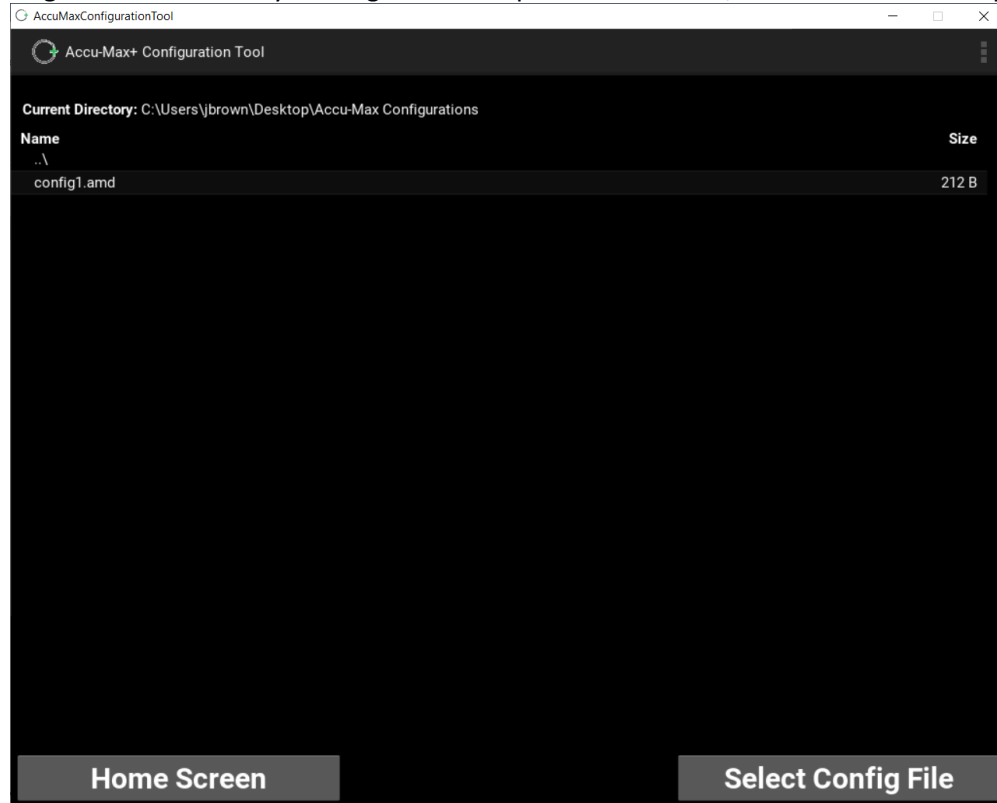


18. Once the folder location and the file name are selected, click the “Save” button and the configuration will be saved in the folder for future reference or use. (File shown below in folder location.)

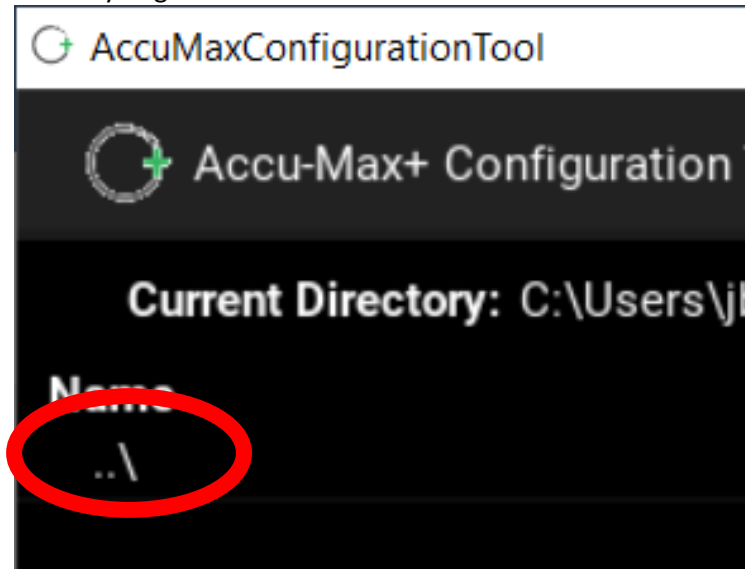
Name	Date modified	Type	Size
 config1.amd	12/28/2020 2:58 PM	AMD File	1 KB

6 Opening a Configuration File

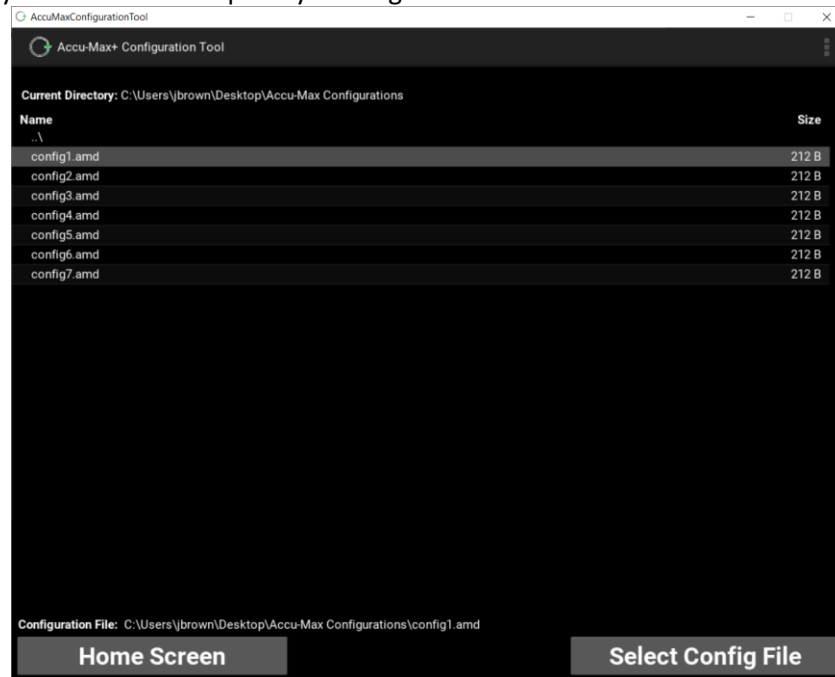
1. To open an existing Configuration File, go to the Main Screen and select the “Open Configuration File” tab by clicking the box. Upon this selection, the next screen will appear:



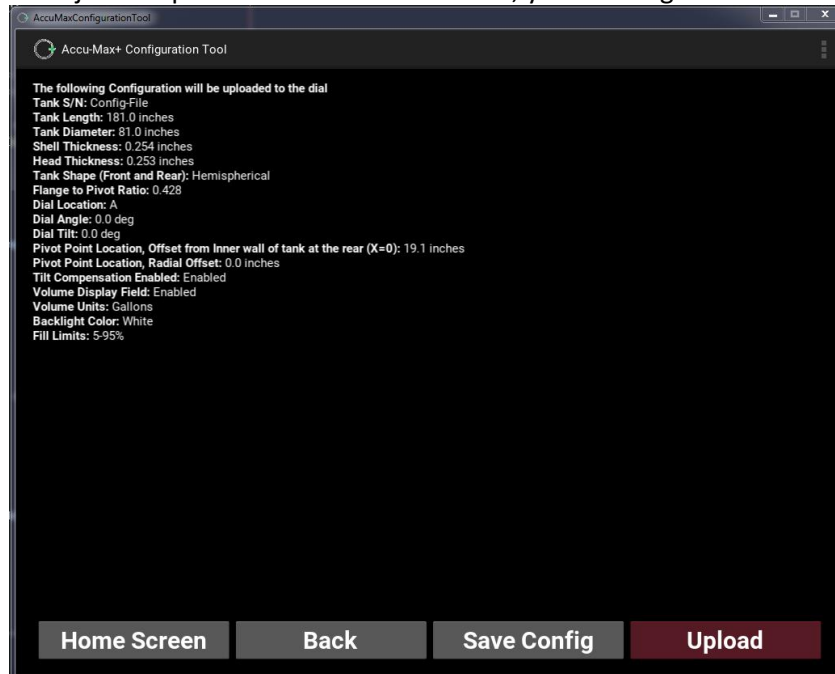
2. To select the location (folder) where the file is located if it is not the “Current Directory” shown, click on the Backslash item under the “Name” (shown as ..\) and move through the folders on your computer until you get to the location desired.



- Once the proper folder is selected, the configuration files will appear. Select the configuration file that you would like to open by clicking it on the list.



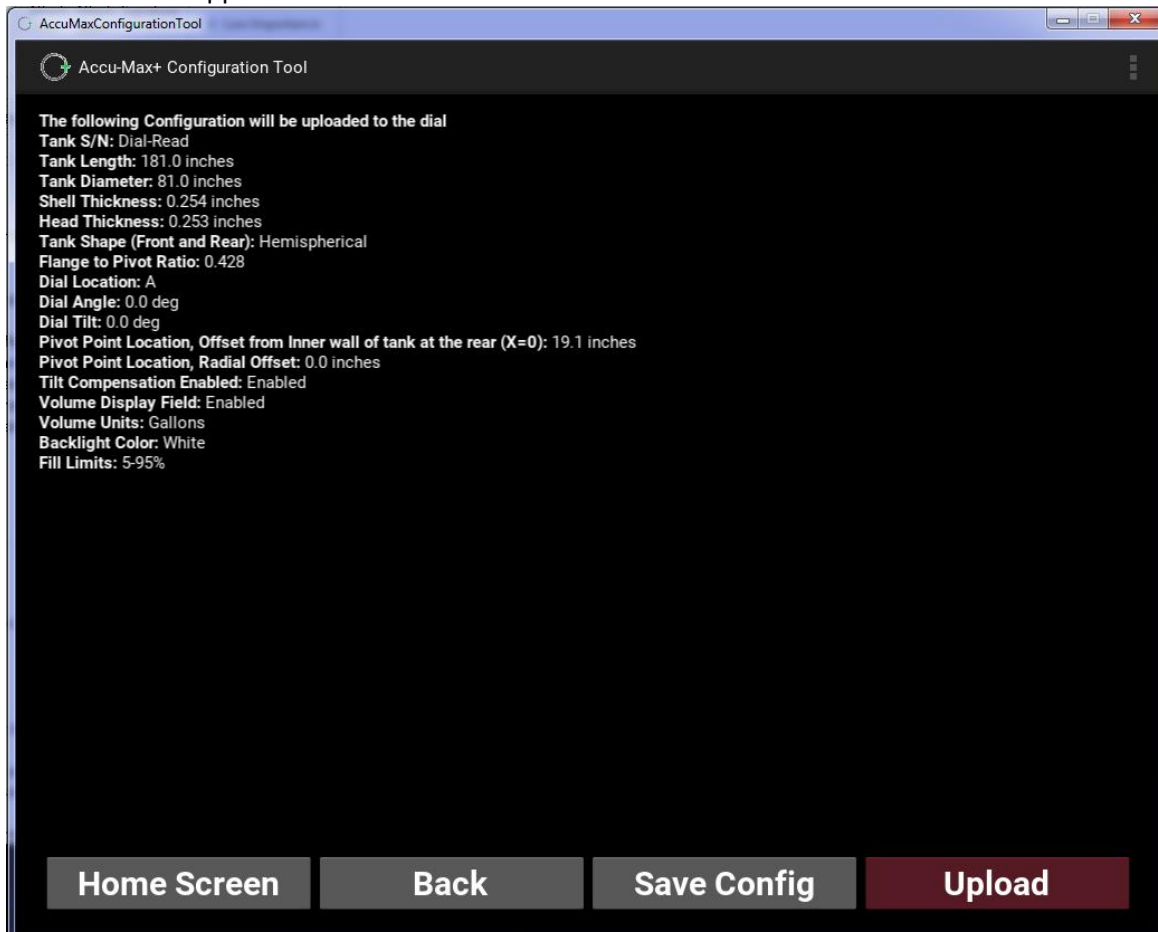
- Once the desired file is selected, click the “Select Config File” button. The following screen will appear (this is just a representative information set, your set might be different):



- If the details listed in the window appear correct, select the “Upload” button and the information will be uploaded to the attached Accu-Max+ Digital Dial. Additionally, after the dial has been programmed, a date stamped log file is automatically stored in the “\data” directory.”

7 Reading a Connected Dial

1. To read the information on a dial, first connect it to the Dial Communication Cable.
2. On the main screen, select the “Read Connected Dial” tab by clicking the box. The USB connector and the PCM “Activity” light will flash at this time. Upon this selection, the next screen will appear with the information taken from the connected dial:

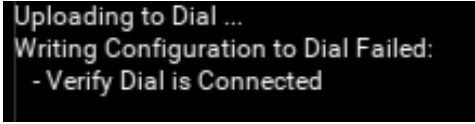
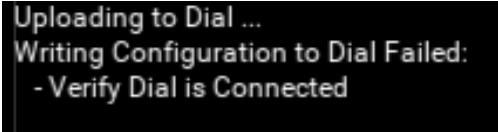
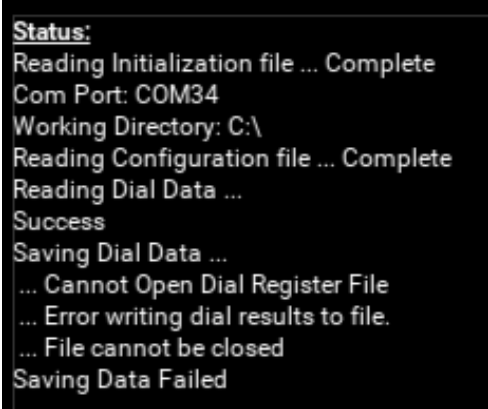

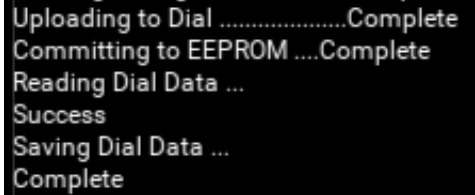


Additionally, after the dial has been read, a date stamped log file is automatically stored in the “data” directory.”

3. You can choose to save the configuration file for future use in order to ‘clone’ an existing configuration. Note that only key features are cloned such as tank dimensions and backlight color.
4. To configure a new dial with the parameters which have just been read, connect the programming cable to the new dial and press the Upload Button.

8 Troubleshooting

In the event of an issue in configuring the dial, return to the Home Screen and review the details contained in the Status Window.

Issue	Status Message	Solution
The computer does not see the Configurator Kit set-up.		Refer to Section 4 and make certain that the correct communication port is selected.
		Verify that all of the connections are present and correct and that all connectors are secured tightly.
The configuration did not get uploaded to the dial.		Attempt the upload again by clicking the "Upload" button.
		Verify that all of the connections are present and correct and that all connectors are secured tightly.
		Verify that the power supply is turned on and has power coming out of the supply.
Unable to save Configuration file or Dial Status.		Verify that you are able to write to the Working Directory.
		Change the Working Directory by opening the "Directory" dialog under the three dots in the top right corner of the screen, seen here: 
The dial is not displaying the proper information.		Verify the input data that has been uploaded on the dial and compare this information to the tank information.
<p><i>If there are any issues that cannot be resolved, please contact the Technical Service Department at Marshall Excelsior @ 269.789.6700</i></p>		

Appendix A

Please see below for the distance necessary for the “Flange-To-Pivot Length, inches” dimension in Section 5 of this IOM.

Float Gauge P/N			Flange-to-Pivot Distance, inches
ME930-39			11.31
ME930-39-1120			
ME930-42-1118			
ME930-46-1120			
ME930-48-1521			15.09
ME930-59-1225			11.52
ME930A-60-2727			27.47
ME930-40-1817	ME930-60	ME930-71	18.09
ME930-46	ME930-63	ME930-72	
ME930-48	ME930-63-2428	ME930-73	
ME930-50	ME930-64	ME930-74	
ME930-53	ME930-65	ME930-75	
ME930-54-1823	ME930-66	ME930-76	
ME930-56	ME930-67	ME930-77	
ME930-57	ME930-68	ME930-78	
ME930-58	ME930-69	ME930-79	
ME930-59	ME930-70	ME930-81-1835	
ME930-42			15.09
ME930-45			
ME930-53-1523			
ME930-72-1527			
ME930-72-2433			24.00
ME930-89-2438			
ME930-79-3036			29.53
ME930-54	ME930-76-2432	ME930-82	24.09
ME930-55	ME930-79-2434	ME930-83	
ME930A-60-2425	ME930-79-2436	ME930-84	
ME930A-62-2430	ME930-80	ME930C-91-2442	
ME930-72-2431	ME930-81	ME930-92-2439	
ME930-63-2627	ME930-89	ME930-95	26.09
ME930-72-2631	ME930-90	ME930-96	
ME930-85	ME930-91	ME930-97	
ME930-86	ME930-92	ME930-98	
ME930-87	ME930-93	ME930-99	
ME930-88	ME930-94		