



How to Perform a Water Hardness Test with Tommy Duplex

Overview:

The purpose of this test is twofold. The first sample will provide the incoming water hardness in Grains per Gallon, and the second sample will provide the water hardness coming out of the softeners. These values can then be used to confirm that the softeners settings are correct and that they are working optimally.

Parts (Order Separately):

1 x P-SE-2178 - Water Hardness Test Kit (One kit is good for numerous tests)

Procedure:

Step 1: First, test the hardness of the incoming city water. Using water from the bathroom sink, rinse out the mixing bottle and test tube provided in the test kit.



Figure 1: Rinse out the test tube and mixing bottle to remove any contaminants

Step 2: Fill the test tube completely with water from the sink and pour it into the mixing bottle. Using the black scoop provided in the kit, add a level scoop of the hardness reagent (purple powder) to the bottle and swirl the solution to mix it. The powder should completely dissolve and the water should turn purple.



Figure 2: Reagent dissolved in sample water will turn purple

Step 3: Fill the eye dropper with the titrate solution. Add a single drop of the solution to the mixing bottle and swirl the solution. Repeat this process, counting each drop that is added, until the water in the mixing bottle turns from purple to a clear blue. The color change will be obvious. The number of drops added to the mixture until it changes color is the hardness of the incoming water in Grains Per Gallon of CaCO_3 . Now, confirm that both softeners are programmed to 2 GPG above this incoming water hardness (Instructions for programming the softener hardness is given in the appendix).



Figure 3: When the sample mixture turns blue the test is complete

Step 4: Next, collect a soft water sample. At a time when both the City Mainline Booster and Pod Booster pumps are not running, slowly open the fill valve on the Hot Water Pillar and rinse out the test tube and mixing bottle. Repeat the process from step 3 using the softened water. The mixture should change from purple to blue after one drop of solution is added, indicating that the water hardness is less than 1 GPG. If it takes more than 2 drops of solution to change the color of the mixture, there is a problem with one or both softeners not properly softening the water. Confirm there is enough salt in the brine tank, that the softeners are both powered on, and that one currently shows it is softening. Confirm that the hardness setting on both softeners is set 2 GPG above the value determined in step 3 (Softener programming instructions are provided in the Appendix). If the settings were far lower than the current incoming hardness, correct them and retest the following day to determine if that was the cause of the high hardness. If there are no obvious problems but the hardness is still higher than 2 when retesting, reach out to Equipment Support for further troubleshooting.

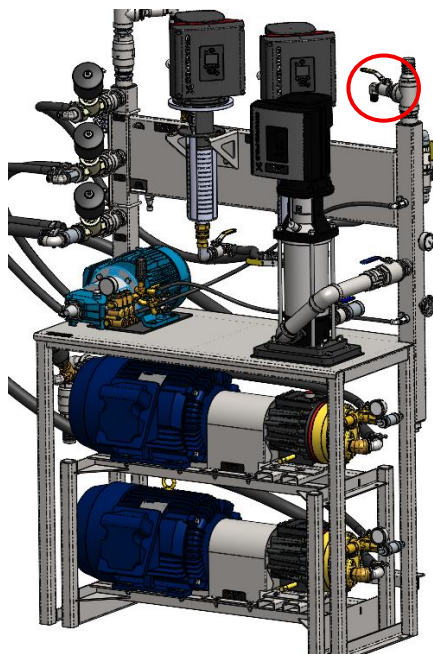


Figure 4: Use the fill valve on the AIO hot water pillar to collect a soft water sample



Figure 5: Rinse both the test tube and mixing bottle before testing

Appendix:

Confirm the softeners are both set to the correct hardness level. If the incoming hardness is less than 20 GPG, follow the steps below:

3.1 – Hardness less than 20 Grains (*default*)

1. Push and hold NEXT & UP. The screen will turn yellow and flash – “ENGLISH LANGUAGE.”
 - a. Push NEXT.
2. WATER HARDNESS
 - a. Set to local hardness PLUS 2 grains (I.E. if the local hardness is 12, set the head to 14).
 - b. *If you do not know the hardness, set the head to 15 as a starting point.*
 - c. Push NEXT.
3. DAYS BETWEEN REGENERATION
 - a. Set to “OFF.”
 - b. Push NEXT.
4. ENERGY SAVER
 - a. Set to “OFF.”
 - b. Push NEXT.
5. At this point the screen should change to blue and go back to STAND BY.

NOTE: all the steps above need to be done for BOTH softener heads.

If the incoming hardness is more than 20 GPG, follow the steps below:

3.2 –Hardness Greater than 20 Grains

1. Push and hold NEXT & UP. The screen will turn yellow and flash – “ENGLISH LANGUAGE.”
 - a. Push NEXT.
2. WATER HARDNESS
 - a. Set to local hardness PLUS 2 grains (I.E> if the local hardness is 25, set the head to 27).
 - b. Push NEXT.
 - c. *NOTE: If site hardness is greater than 30 grains, contact TCWS for alternate solutions.*
3. DAYS BETWEEN REGENERATION
 - a. Set to “OFF.”
 - b. Push NEXT.
4. ENERGY SAVER
 - a. Set to “OFF.”
 - b. Push NEXT.
5. At this point the screen should change to blue and go back to STAND BY.
6. FILL TIME & CAPACITY
 - a. Hold NEXT & DOWN – screen will change to yellow.
 - b. Keep pushing NEXT until you get to “FILL TIME.”
 - c. Change the fill time from 13.5 mins to 23.0 mins.
 - d. Push NEXT – should be on GRAINS OF CAPACITY
 - e. Change from 240.0K to 300.0k x 1.
 - f. Keep pushing NEXT until the screen changes to blue and goes back to STAND BY.

NOTE: all the steps above need to be done for BOTH softener heads.

If you have any questions, please reach out to either Client Services or Equipment Support

Client Services – 616-795-4893

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