

HOW TO DO

Checking hardware volume before the WIT test (PTFE filters / hydrophobic filters)

What I have used

Required	Quantity
Filter housing	1x
1" Stäubli connector	2x
1" Tri-Clamps	2x
1" gaskets	2x
¼" blind cap	1x
¼" Tri-Clamp	1x
¼" gasket	1x
6 L stainless steel tank	1x
Precision balance	1x
3-way valve with transparent tubing (see Figure 1)	1x

Step-by-Step Procedure

1. Turn on the compressor, for example to 7 bar.
2. Set the pressure regulator (the small one) located near the filter housing to **0.0 bar**.
3. Install the **DRY hydrophobic** filter cartridge in the filter housing.
4. Connect the pressure sensor of the IT-tester to the top of the filter housing using a single Stäubli connector, for example with a 1" to Stäubli adapter, 1" Tri-Clamp, and 1" gasket.
5. Also connect a single Stäubli connector to the INLET of the filter housing, for example using a 1" to Stäubli adapter, 1" Tri-Clamp, and 1" gasket.
6. Blind the drain of the filter housing, for example by using a ¼" blind cap connected with a ¼" Tri-Clamp and ¼" gasket.
7. Leave the OUTLET of the filter housing open.
Do NOT blind it and do not connect anything to it.
8. Fill the stainless steel tank completely with water.
9. Turn on the precision balance.
10. Place the tank on the balance.

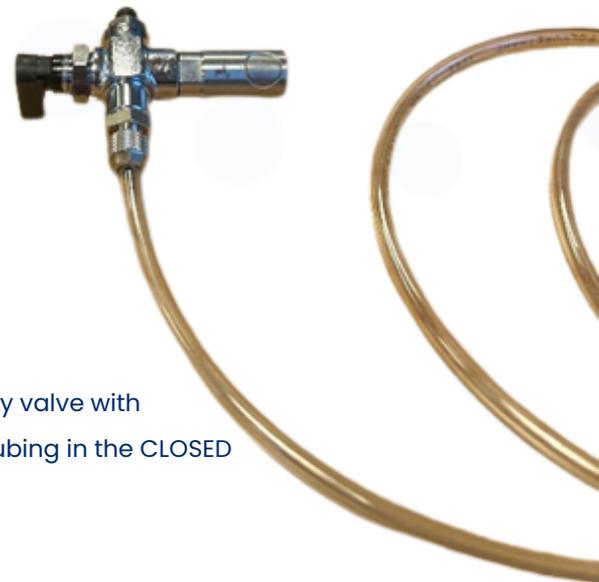


Figure 1: 3-way valve with transparent tubing in the CLOSED position



11. (Connect the 3-way valve with transparent tubing to the Stäubli inlet of the filter housing. See **Figure 1**.)
12. Ensure that this valve is fully closed. See **Figure 1**.
13. Connect the transparent tubing of the 3-way valve to the outlet side of the 6-liter stainless steel tank filled with water.
14. Connect the small compressed air pressure regulator to the inlet side of the 6-liter stainless steel tank.
15. Set the small pressure regulator to **0.5 bar**. **Ensure that the 3-way valve at the inlet of the filter housing remains fully closed.** See **Figure 1**.
16. Turn on the IT-tester.
17. Select any block → press the FUNCTION button → select FURTHER FUNCTIONS → select MASTER MENU → enter the password.
18. A screen will appear on the IT-tester showing **EX: 0.0**.
19. Slowly open the 3-way valve (at the inlet of the filter housing) **so that it is in line with the transparent tubing.** See **Figure 2**. Water will now flow through the tube to the filter housing.
20. When the water reaches the last / upper pore of the membrane (**Figure 3**), an increase in pressure will appear on the IT-tester. The value EX: 0.0 will start to increase.
21. Quickly close the 3-way valve. See **Figure 1**.
22. Wait approximately 5 seconds until the EX value stabilizes.
23. If the EX value remains above 0.0 after stabilization, you can be sure that the last pore of the membrane has been reached.
24. Place a collection cup under the blue-black valve of the 3-way valve.
25. **Carefully** move the valve to the position in line with the small blue-black valve. See **Figure 4**. **Ensure that the EX value on the IT-tester returns to 0.0 or slightly above (for example 0.2).**

Figure 2: 3-way valve position for FILLING the filter housing

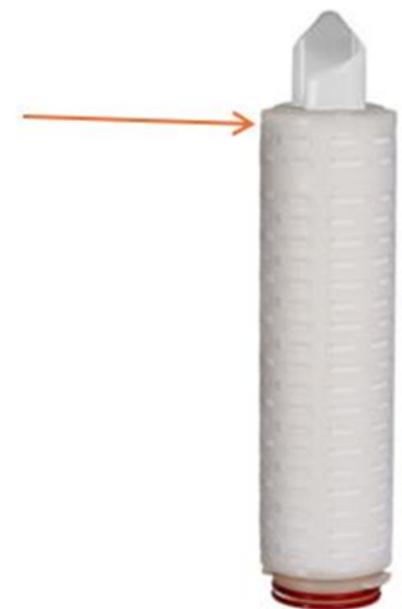
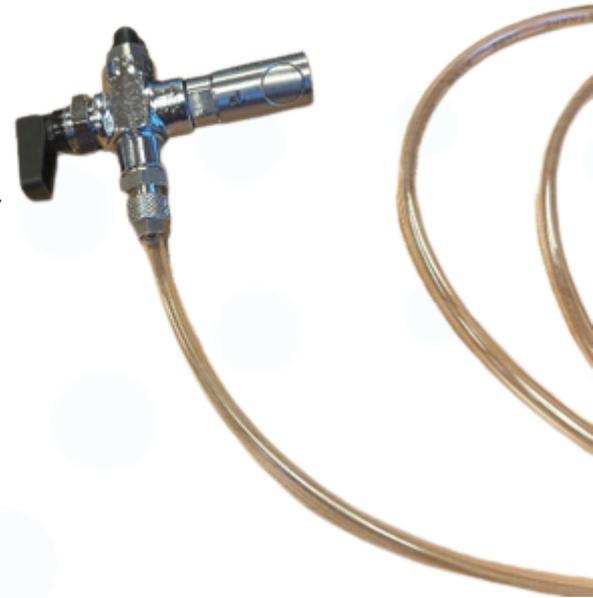


Figure 3: Uppermost pore of the membrane



Figure 4: 3-way valve position for EMPTYING the filter housing

26. Disconnect the pressure sensor from the top of the filter housing and set it aside.
27. Remove the Stäubli connector from the top of the filter housing, but leave the gasket in place on top of the filter housing.
28. Press the TARE button on the balance so that the display reads 0.000.
29. Fill the filter housing by setting the 3-way valve in line with the transparent tubing **(Figure 2)**. Fill until the water reaches the edge of the opening where the pressure sensor was previously installed. See **Figure 5**. Quickly close the 3-way valve to prevent the water from overflowing **(Figure 1)**.
30. The balance will now show a negative value (-), for example -0.583 g. This means the **hardware volume** is 583 mL. Record the hardware volume you have just calculated for this filter housing with this specific filter cartridge. Save this value for future reference and use.
31. You can now empty the filter housing by simply disconnecting the compressed air line from the inlet side of the 6 L stainless steel tank.
32. Set the 3-way valve in line with the transparent tubing **(Figure 2)**. The water will flow from the filter housing back into the 6 L stainless steel tank.

Figure 5: Water filled to the rim, against the gasket



HOW TO DO

Performing the WIT test (after the hardware volume has been determined).

Step-by-Step Procedure

1. Ensure that there is sufficient water in the 6-liter stainless steel tank.
2. Prepare the filter housing as follows:
 - A. Install a single Stäubli connector on top of the filter housing (for example with a 1" Tri-Clamp and 1" gasket).
 - B. Install a single Stäubli connector on the INLET of the filter housing (for example with a 1" Tri-Clamp and 1" gasket).
 - C. Blind the drain of the filter housing (for example with a ¼" blind cap, ¼" Tri-Clamp, and ¼" gasket).
 - D. Leave the OUTLET of the filter housing completely open.
3. Install a hydrophobic, relatively DRY (non-wetted) filter cartridge in the filter housing.
4. Connect the compressor (via the pressure regulator) to the IT-tester at the "LINE PRESSURE" connection of the tester.
5. Connect a tube from the PRESSURE OUTLET of the IT-tester to the INLET of the 6-liter stainless steel tank.
6. Connect the blue tube of the black Filling Valve to the OUTLET of the 6-liter stainless steel tank.
7. Connect the Filling Valve to the INLET of the filter housing.
8. Turn on the compressor and set the pressure to 6–8 bar.
 - If no program needs to be set, proceed directly to step 13.
 - If a program still needs to be set, follow steps 9 to 12.
9. Turn on the IT-tester. Select any block and remember which one → press FUNCTION
 - select [4] FURTHER FUNCTIONS. **Note: Make sure the automatic flushing is OFF**
 - Then select [1] PROGRAMMING.
10. Enter the password using the keyboard.
11. Select the WIT test.



12. Enter the test parameters:

- A. Stabilisation time: 10 minutes (600 seconds)
- B. Test time: 10 minutes (600 seconds)
- C. Test pressure: See the filter certificate (e.g. 2500 mbar for BPFM17SP0002 Batch No. K24P117)
- D. Max allowable flow: **See the certificate** (e.g. **3714** μL per **10-inch filter** per **10 minutes**, therefore the test time is set to 600 seconds for BPFM17SP0002 Batch No. K24P117)
- E. Hardware volume you have calculated earlier

13. Select the block where the test program is stored.

14. Press ENTER and verify that the correct program settings are selected.

15. Press START and the tester will run the test.



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