Sample Analysis

Before Running Samples

Flushing the PODS+ is also an essential procedure to obtain an accurate and representative sample. upon finishing the previous series of tests, the sample still resides in the PODS+. This fluid must be flushed out with a fluid that will not contaminate the next sample. Reducing contamination results in more statistically significant results.

See Flushing the PODS+ In the sample Preparation chapter.

⚠ CAUTION

Risk of damage to the instrument. The PODS+ -R units have a moisture sensor for detecting moisture in oil based liquids. Serious damage can occur to the moisture sensor if aqueous, or water based, liquids are sampled with a STD -R instrument. To prevent damage to a STD -R instrument moisture sensor, do not run aqueous, or water based, liquids with a STD -R instrument. The warranty on the moisture sensor will be void if water based liquids are sampled. A failure is indicated by a non-recoverable high or maximum moisture, for instance, a 100% reading.

Bottle Mode

⚠ WARNING

Risk of personal injury and/or damage to the instrument. If the sample cup adapter is not installed properly when pressurization begins, it can be forced off of the PODS+ and personal injury and/or damage to the instrument may occur. To prevent risk of personal injury and/or damage to the instrument, ensure the sample cup adapter is installed properly before pressurization begins.

The sample cup adapter is a pressure vessel used for sample delivery through the PODS+. It is critical that it is installed in the locked position before sampling. The sample cup adapter must be aligned on the PODS+ and in the locked position.

A “shop air” pressure source can be connected to the PODS+ to supply the external pressure.

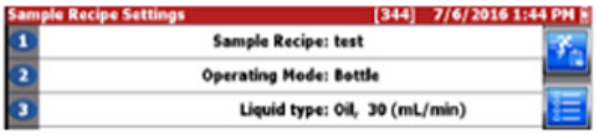
Although the PODS+ is designed for rugged use, it is still an instrument that should be cared for and maintained as described in this manual. Following proper safety and handling instructions will promote accident free operation and prolong product life.

Bottle Mode Sample Analysis

In this mode, a sample fluid is placed into the sample cup adapter and connected to the PODS+. The internal pump or an external pressure source is used to force the sample Fluid through the PODS+.

1. From the PODS+ Home screen, press the menu button next to and ensure the sampling mode is set to Bottle, press 2 ABC and then 1 if necessary. Verify the other operation variables are programmed as needed.

   See Programming operation variable for more information.



If using shop air, ensure the pressure source has been connected to the PODS+ and that there is 90 to 110 PSI (6.2 to 7.6 bar) shown on the pressure gauge. Due to regulation variances, the pressure shown on the pressure gauge may creep up to 120 psi (8.3 bar) during no flow conditions. The pressure should drop when a sample is started.

Bottle Operation Specifications

Table 4.3 Bottle Operation Specifications

Sample Delivery Method	Pneumatically pressurized sample chamber
Internal Air Source	Internal Compressor up to 40 psig (for up to 150 cSt viscosity liquids)
External Air Source	Clean Dry Air (CDA) source up to 110 psig (required for fluids with viscosity above 150 cSt viscosity).
Tare Volume	5 mL to 50 mL in 1 mL increments

Disconnect the sample cup adapter from the PODS+ by turning counter-clockwise.

Fill a sample bottle with the fluid to be tested.

Place the sample bottle into the sample cup adapter and re-connect it to the PODS+ by sliding the pick-up tube into the sample bottle and turning clockwise until locked.

Double-check to make sure the waste bottle can accommodate the amount of fluid required to complete a sample.

7 Press the menu button next to and to run the sample.

The sampling process begins.

- The PODS+ does an initial purge before a sample is taken.
- The sample cup adapter pressurizes and performs three consecutive 5, 10, or 20 mL runs,depending on what was programmed.
- Fluid exits the drain port after the entire sample run is complete. It is stored in the internal metering pump and purged after sampling is completed.

NOTE On PODS+ -R units, there is a wait period of up to 5 minutes after the sample is completed to allow time for the moisture sensor to stabilize in the liquid. For the RH value, Waiting is displayed during the wait period. The length of the wait period is dependent on the change of moisture content from one run to the next. The larger the change, the longer the wait period.

When the sample process is completed, the test results are,

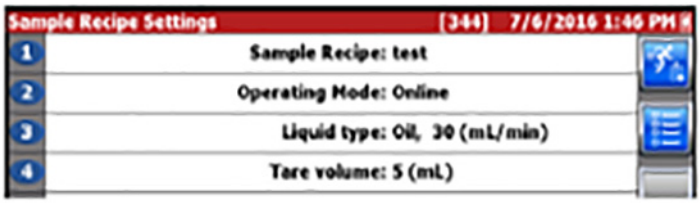
- Stored in the buffer,
- Presented on the display,
- Printed if the printer is enabled,
- Automatically exported to the USB drive if enabled.

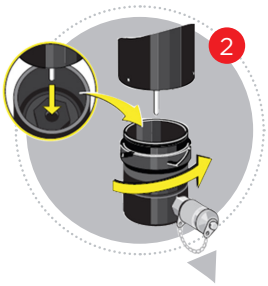
Online Mode

In this mode, a sample can be fed directly from a hydraulic system. The reduced probability of contamination makes this the most accurate method of sampling. The internal metering pump draws the fluid through the PODS+. The shop air can remain connected during the sampling process if desired.

Online Mode Sample Analysis

1 From the PODS+ Home screen, press the menu button next to and ensure the sampling mode is set to Online, press 2 ABC and then 2 ABC if necessary. Program the desired number of runs, hold time, and purge volume. The purge volume should be approximately twice the internal volume of the hydraulic tube that connects the PODS+ to the system. Verify the other operation variables are programmed as needed. See Programming operations variables for more information.

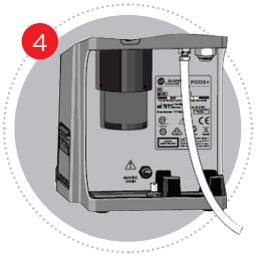




Connect the online adapter to the PODS+ by sliding the pick-up tube into the hole in the center of the adapter and turning clockwise until the adapter is locked.

Conned a hydraulic hose with a Minimess test hose thread to the online adapter. Connect the other end of the hydraulic hose to the system to be tested.

Remove the waste bottle and connect a waste line that is routed to a waste receptacle that is at atmospheric pressure. Ensure there is no back pressure on the waste output from the PODS+.



5 Press the menu button next to and to run the sample.

The sampling process begins.

- The PODS+ does an initial purge before a sample is taken.
- The sample cup adapter pressurizes and performs three consecutive 5, 10, 20, 50, or 100 mL runs,depending on what was programmed.
- Fluid exits the drain port after the entire sample run is complete. It is stored in the internal metering pump and purged after sampling is completed.

NOTE On PODS+ -R units, there is a wait period of up to 5 minutes after the sample is completed to allow time for the moisture sensor to stabilize in the liquid. For the RH value, Waiting is displayed during the wait period. The length of the wait period is dependent on the change of moisture content from one run to the next. The larger the change, the longer the wait period.

When the sample process is completed, the test results are,

- Stored in the buffer,
- Presented on the display,
- Printed if the printer is enabled,
- Automatically exported to the USB drive if enabled.

Filter Cart

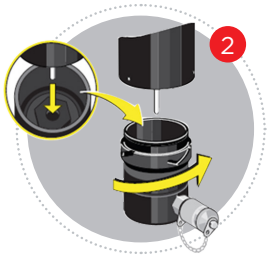
The Filter cart mode is designed to allow the user to monitor the fluid cleanliness level while filtering fluid. The user has to program sampling parameters, including sampler intervals, and target cleanliness levels. The PODS+ will take samples at programmed intervals while the system fluid is being filtered.

when the system fluid meets the programmed cleanliness level, the PODS+ will then beep, stop sampling, and print the last two sample results if the printer is enabled. If the filter pump ON /OFF control solenoid is connected to the PODS+ via the optional I/O connection, then the pump will be turned ON when the filter start function is selected. The filter pump will automatically be turned OFF when the cleanliness level is achieved.

The PODS+ fluid pressure requirement varies with the fluid viscosity and selected flow rate (approximately 40 psi @ 10 centistokes viscosity—higher viscosity will require higher pressure). minimum pressure has to be maintained to regulate fluid through the PODS+ unit. Set the flow rate to 50mL/min for light fluids or 15mL/min for heavy fluids.

Filter cart mode Sample Analysis

1. From the PODS+ Home screen, press the menu button next to and ensure the sampling mode is set to Filter cart, press 2 ABC and then 2 ABC if necessary. Program the desired operation variable as needed. See programming operation variables for more information.
    - Liquid type
    - Tare volume
    - Run volume
    - Number of samples
    - Hold time
    - Reporting standard



Connect the online adapter to the PODS+ by sliding the pick-up tube into the hole in the center of the adapter and turning clockwise until the adapter is locked.

3 Connect a hydraulic hose with a M16 x 2 test hose thread to the online adapter. Connect the other end of the hydraulic hose to the fluid source.

4 OPTIONAL—Connect the filter pump solenoid control to the PODS+ In/Out connector. (See Input/Output Interface (I/O port) for the port pin configurations.)

5 Remove the waste bottle and connect a waste line that is routed to a waste receptacle that is at atmospheric pressure. Ensure there is no back pressure on the waste output from the PODS+.

6 Press the menu button next to  and  after the filtering process has begun to ensure adequate pressure to deliver fluid to PODS+ unit.

The PODS+ will run samples at the program interval. When the target cleanliness is detected, PODS+ will terminate the sampling process. Up to 500 test results will be stored in the buffer, presented on the display and/or printed if the printer is enabled.

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