How To Take An Oil Sample

Several different sampling methods exist to gather in-service oil, but they are not all the same. Collecting from the wrong place or long after the equipment stopped operations will alter the test results. This could mask damage occurring inside equipment or lead to recommendations for unnecessary maintenance.

Recommendations for All Sampling

Regardless of method, every oil sample should follow these techniques.

Use the following tips to capture the best sample possible:

- Never re-use disposable tubing
- Purge stagnant oil from installed devices and tubing before collecting samples
- Make sure the sample bottle is clean and free of contaminants
- Fill out all equipment and fluid information in the HORIZON® web or mobile app

to eliminate:

  - o Oil spills on paperwork
  - o Handwriting errors
  - o Duplicate equipment
  - o Holds due to missing information
  - o Sending paperwork with the sample

- Send the sample to the lab immediately using a trackable mail service

Choosing the Right Process

The best samples collect the oil circulating through the system during normal operations. System pressure and accessibility might require different equipment and methods to collect samples, so each maintenance program needs to make a decision on the process that is right for them.

PURE Reliability

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Installed Sampling Devices

These permanent devices collect the most representative samples possible in the least amount of time. The two common types differ based on the system pressure, operating environment and clearances.

Sampling with a KP Pushbutton Valve

The KP Series is a push button sampling valve that is installed on a pressurised system. The valve should be installed on a pressurized line with a minimum of 5 psi (.035 MPa) and a maximum of 750 psi (5.17 MPa).

STEP 1 - Have the equipment being sampled at or close to normal operating temperature with the equipment running. Remove the protective cap from the valve and wipe the opening with a clean, dry, lint-free cloth. Place a separate waste under the valve opening. Press the KP Series button and flush at least three times the fluid in the valve into the separate waste container. Dispose the waste oil properly.

STEP 2 – Remove the lid from the sample bottle. Place the sample bottle under the valve opening. Press the KP Series button to dispense fluid into the sample bottle filling it to approximately ¾ full.

STEP 3 – Release the KP Series button to close the valve. Place the protective cap back onto the valve and secure it firmly. Screw the cap onto the sample bottle and tighten securely before wiping the outside of the sample bottle with the cloth.

STEP 4 – Place one barcode label on the sample bottle and submit the sample information online in the HORIZON® web or mobile app.

The KST Series sampling valve is a needle valve that is installed on a pressurised (5 to 4,000 psi / 0.35 to 27.58MPa) systems. Then a needle probe cap [QDCAP] includes everything needed to retrieve samples from pressurised systems (max. 750 psi / 5.17 MPa), which includes a bottle cap, 4" tube with a needle and a vent opening to allow flow.

STEP 1 – Have the equipment being sampled at or close to normal operating temperature with the equipment running. Remove the protective cap and wipe the valve with a clean, dry, lint-free cloth. Hold a separate waste container under the needle valve cap and insert the needle probe into the valve. Flush (at least three times) the fluid in the valve into the container to purge stagnant oil and debris. Remove the needle probe to stop the flow and set the separate container in a safe place.

STEP 2 – Remove the cap from the sample bottle. Place the needle probe cap onto the sample bottle and secure it firmly. Reinsert the needle probe to open the valve. Fill the sample bottle to approximately ¾ full.

STEP 3 – Remove the needle probe to stop the flow. Place the cap onto the sample bottle and tighten securely before wiping the outside of the sample bottle with the cloth.

STEP 4 – Tighten the protective cap back onto the valve. Wipe the valve with a clean rag to remove any excess fluid. Discard the KST Series cap assembly in a safe manner.

STEP 5 – Place one barcode label on sample bottle and submit the sample information online in HORIZON® web or mobile app.

NOTE For sampling pressures above 750 psi use a VCP sampling probe (pressure rated from 750 – 4000 psi / 5.17–27.6 MPa). For unpressurised systems (0-125 psi / 0-0.86 MPa), it is recommended to consider an L/LT style valve and quick connect probe, and if needed, utilise tubing and a vacuum pump to draw fluid from the valve.

PURE Reliability

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Sampling with a Vacuum Pump

MODERATE
REPRESENTATIVE SAMPLE

SLOW
SAMPLE SPEED

The vacuum pump and disposable tubing are used to extract samples from a dipstick or fill port of a shut-down or non-pressurised system.

STEP 1 – Have the equipment being sampled at or close to normal operating temperature with the equipment shut off. Place clean, dry, lint-free cloth on a nearby surface and lay out sampling tools. Remove dipstick and place on the cloth. Lay the tubing along the length of dipstick and make a mark where the tube meets the top of the stick. Measure 12 inches (30 cm) above the mark and cut the tube. If using a sample port without a dipstick, measure the outside of the reservoir tank, measure from the top of the port to halfway down the tank, place a mark at that length from the end of the tube, and cut the tube 12 inches above the mark.

STEP 2 – Ensure the vacuum pump is clean (especially around the mounting area / face for the bottle). Insert the tube through the head of the vacuum pump and tighten lock ring. The tube should extend about one inch (3 cm) beyond the base of the vacuum pump head. Screw in the sample bottle to the bottom of the vacuum pump and tighten securely.

STEP 3 – Place tube into the reservoir. To avoid drawing settled debris into the sample, only insert the tubing until the mark from Step 1 is flush with the top. Do not allow the tubing to contact the bottom of the sump.

STEP 4 – Push and pull the vacuum pump plunger a few times to start the suction. Continue pumping until sample bottle is ¾ full. Hold the pump upright and do not overfill the bottle to avoid contaminating the vacuum pump.

STEP 5 – Unscrew the sample bottle from the vacuum pump to break the suction and continue to hold the pump upright. Seal the bottle with the lid and tighten securely before wiping the outside of the sample bottle with the cloth.

STEP 6 – Drain remaining fluid out of tube into tank and remove tube from the oil. Wipe off the tube where it extended into the sample bottle. Remove the tube from the pump and properly dispose of it. Reusing tubing will contaminate future samples.

STEP 7 – Place one barcode label on the sample bottle and submit the sample information online in the HORIZON® web or mobile app.

Sampling from a Drain

LEAST
REPRESENTATIVE SAMPLE

FASTEST
SAMPLE SPEED

A drain “catch” requires no equipment beyond a sampl bottle, but it produces a sample that is least representative of the fluid circulating in the machine.

STEP 1 – Have the equipment being sampled at or close to normal operating temperature with the equipment shut off. Open the drain and allow approximately 1/3 of the fluid to drain.

STEP 2 – Quickly move an open sample bottle into the oil stream. Fill 3/4 of the bottle before removing it from the stream.

STEP 3 – Screw the cap onto the sample bottle and tighten securely. Wipe the outside of the sample bottle thoroughly with a clean cloth. This allows the sample label to adhere to the bottle securely.

STEP 4 – Place one barcode label on the sample bottle securely and submit the sample information online in the HORIZON® web or mobile app. No paperwork should be sent in for samples whose information was submitted online.