

Sandy Brae Laboratories

Field Test Kit

For analysis of Hydraulic, Bearing, and Gear Oils



Sandy Brae Field Test Equipment Kit

Testing Procedures

The Sandy Brae Field Test Equipment Kit is primarily intended for field personnel to analyze oil samples at the customer's location. The hardware in the kit enables the user to report the presence of contaminants, both solid and water, plus measure the viscosity of the oil and operating temperatures of the system. With this information, field personnel can provide a measure of oil condition and determine if further comprehensive lab analysis is required.



Vac Pump with tubing

Taking the Sample

Step 1 -

The sample should be taken when the system is at operating temperature or immediately after shutdown. Ideally, the sample should be taken as close to the return line into the reservoir as possible.

Step 2 -

Wipe the surface around the reservoir fill pipe and cap before removing.

Step 3 -

Check fill cap for proper fit then remove. Inspect inside of cap for moisture and ensure that the breather is clean and functional.

Step 4 -

Using the tools in the kit, remove strainer and inspect for breaks in screen.





Pipette Assembly with filter holder

Step 5 -

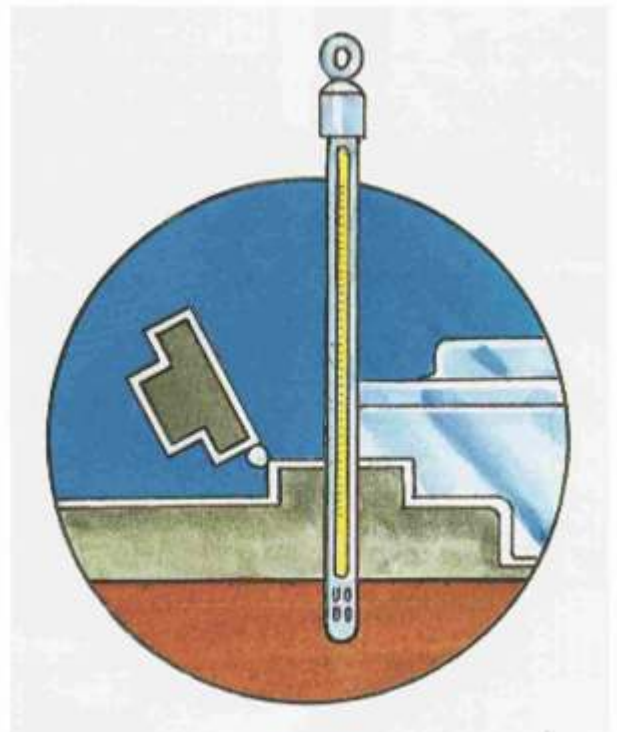
The sample should be taken from the fill hole using either the oil sampling pump or syringe. Insert the suction hose into the reservoir until it reaches the bottom, then withdraw it approximately 3 inches. Fill the sample bottle half full to purge the pump and discard the oil, then refill the bottle. Note: sampling from the drain plug is not recommended as it could yield sediment from the bottom of the reservoir. Some customers install an inline valve specifically for taking samples. This is an acceptable alternative to sampling pumps. If the drain plug is the only access to the system, take the sample by discarding the initial flow of oil to eliminate sediment and refill the bottle with a representative sample.

Step 6 -

Suspend the armor clad thermometer through fill hole and completely immerse it in oil and record temperature.

Step 7 -

Replace the strainer and fill cap. Check the system for leakage, loose or crimped lines, improper line anchors and noise. Record all data.



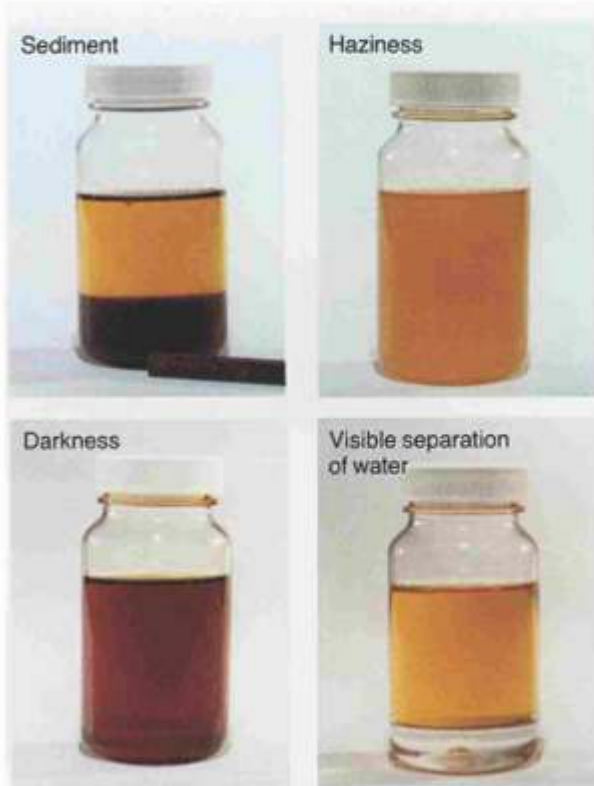
Sandy Brae Field Test Equipment Kit Testing Procedures (Cont.)

Analyzing the Sample

Step 1 -Conduct a visual inspection of the sample. This should be accomplished after the sample has set undisturbed for 15 minutes. Look for:

- Sediment -- If found, pass bar magnet around outside of bottle to determine if iron is present.
- Haziness -- If found, make a note to check for water.
- Visible separation of water -- No need for water test, sample is condemned.
- Darkness -- Make note to check viscosity for oxidation or finely suspended dirt.

Note: While it is not essential, it is a very good idea to conduct a side-by-side comparison of the used sample with that of new oil. Further, observing the sample in front of a light, "or candling," can reveal suspended dirt versus discoloration due to oxidation.



Step 2 -- Measure the viscosity of the oil.

Specific instructions on use of the visgage are included with the instrument. Special Note: Ensure that the sample and reference oil temperatures are equalized as this has a dramatic effect on the reading. Further, repeat the test 3 times to ensure accuracy.



Step 3 -- Test the sample for water.

Complete instructions for this test are included with the Water Test Kit for Hydraulic Oils. Follow these instructions and record results.

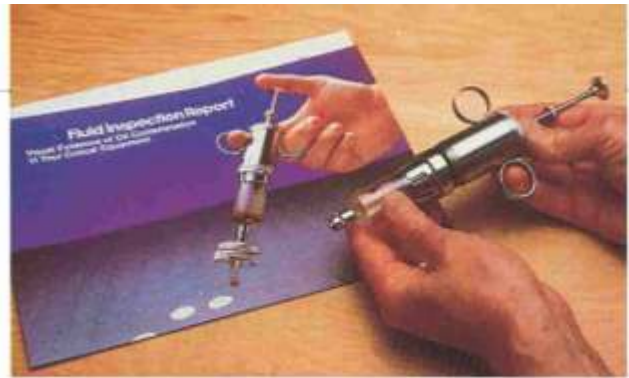


Procedures for Contamination Control

Step 4 -- Assemble the syringe to test for contaminants

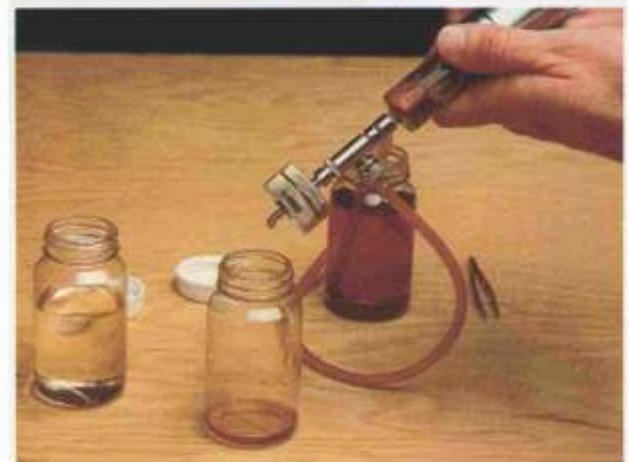
A. Insert glass pipette into metal holder and adjust for 10 cc of sample to be passed through filter.

- Disassemble filter holder, remove plastic o-ring and insert a 5 micron filter onto metal screen. Replace plastic o-ring and reassemble halves of filter holder.
- Attach two way valve, which is at end of the sample tubing to the syringe.
- Attach filter holder to end of the two way valve.



B. Pass the sample through the filter. Note: For heavier viscosity oils or those badly contaminated it may be necessary to dilute the sample with a solvent prior to this test. A standard Stoddard solvent works very well. The ease with which the sample passes through the filter will dictate whether dilution is necessary. (Use a consistent 50% sample and 50% solvent mixture and run 20 cc's through the filter.)

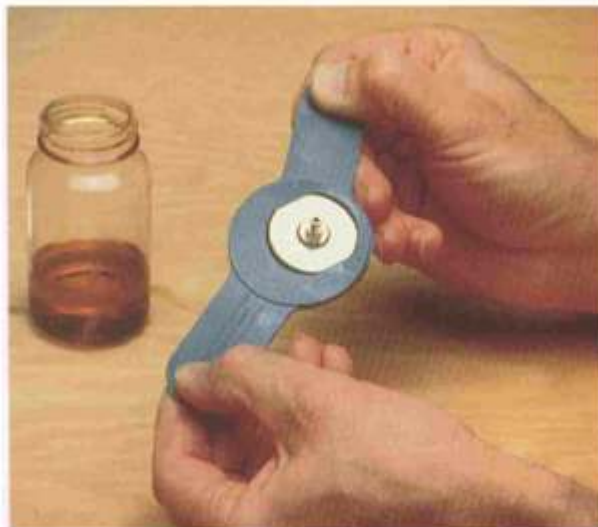
- Shake the oils vigorously, open the bottle and drop the ball end of the syringe assembly into the sample.
- Depress the plunger of the syringe to its fullest extent and release. As the syringe spring forces the plunger out, the sample will fill the syringe cylinder.
- After the syringe is filled, begin pushing the plunger forcing the oil out. Due to the operation of the two way valve, the oil will be forced down through the filter. Note: Contaminants can cause the valve to stick. If this occurs, the sample will flow back into the bottle. This will require disassembly and solvent washing of the valve.



● After the entire contents of the syringe have been forced through the filter, flush at least two times using the Stoddard solvent. This will wash the oil from the filter pad, leaving only contaminants, and will also clean the syringe assembly. CAUTION: Make certain the Stoddard solvent is completely clean before conducting this procedure.



C. Remove the filter pad. Disassemble the filter holder and carefully remove the filter pad using the forceps from the kit. If the pad has been properly washed with solvent, it will be oil free and dry quickly in the air.



D. *Mount the filter.* Place the filter pad on one of the adhesive circles in the Fluid Inspection Report folder.

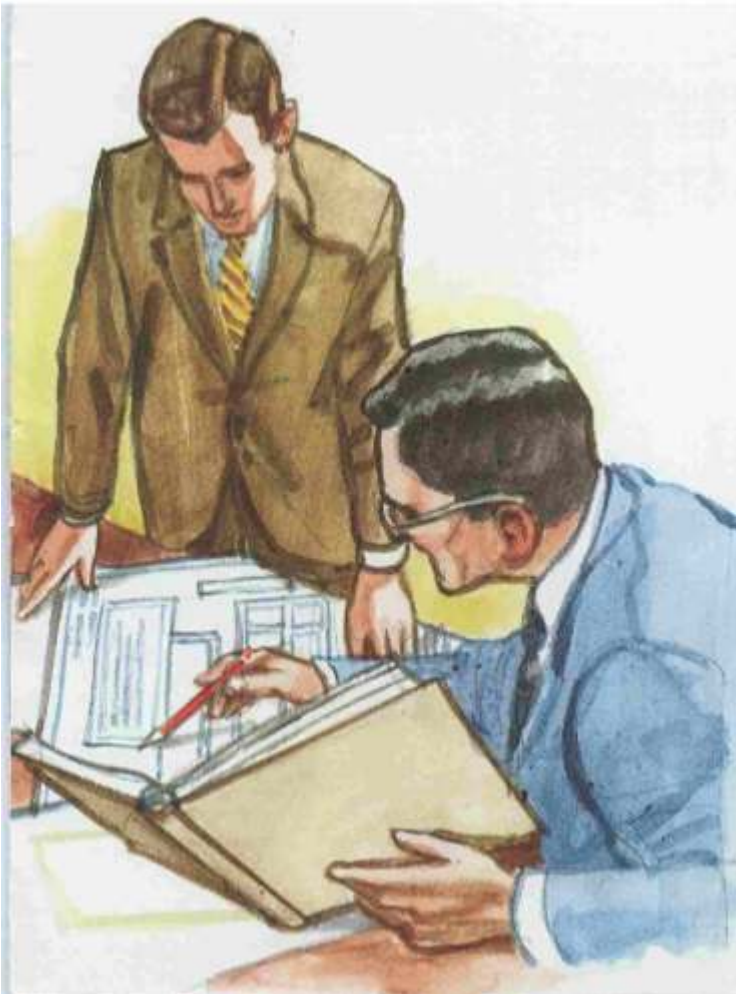
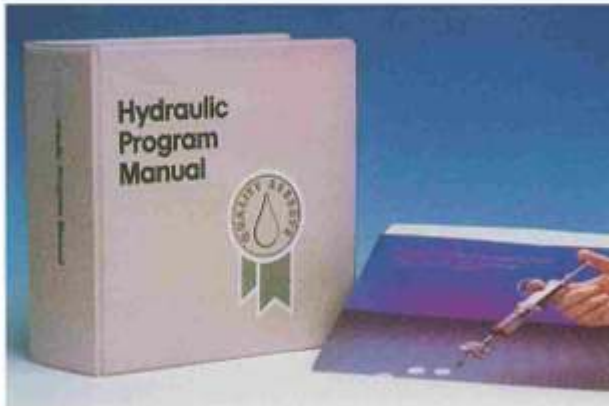


E. *Inspect the filter pad.* Using the illuminated magnifier or light scope and bar magnet from the kit, attempt to identify the material on the pad. The magnet will help to identify iron particles.



Step 5 -- Record all Findings
Use the Fluid Inspection Report.

Step 6 -- Review Analysis with the customer.



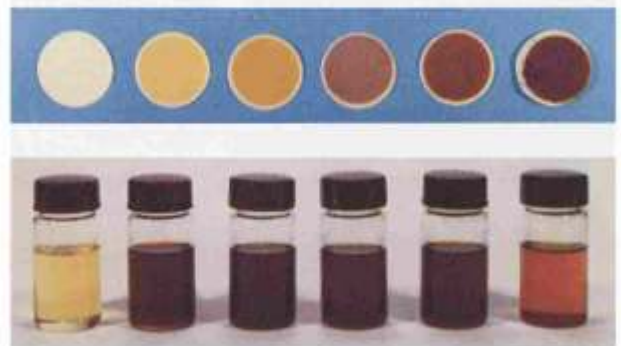
Procedures for Determining Oil Degradation

The Sandy Brae Field Test Equipment Kit also provides a means to evaluate how much an oil has degraded and its tendency to form deposits in a hydraulic system. An accurate rating of oil condition can result in a prompt recommendation to the customer to change the oil in the system. This is particularly important for customers with CNC, computer numerically controlled, equipment which demands extreme system cleanliness for precise operation.

The step-by-step Contamination Control procedures for analyzing a sample should be modified as follows to determine oil degradation:

- A. Use finer filtration, preferably a 0.8 micron filter pad.
- B. Do not, at any time, wash or flush the filter with solvent. The sample is being analyzed for oil degradation not contamination and the use of solvent will dissolve some of the deposits. Push the syringe plunger down forcing the oil through the filter. With the plunger held down, uncouple the filter assembly from the syringe.
- C. The filter will not be oil free or dry since it was not washed with the solvent. Examine the filter and compare it to the standard rating system of Used Hydraulic Oil Deposits for oil degradation.

USED HYDRAULIC OIL DEPOSIT RATINGS





Field Test Kit



Water Test Kit



*Infrared Temp. Gun

* Not part of Field Test Kit



Pipette & Filter Holder



Vac Pump & Thermometer



Viscage

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