

PROCEDURE FOR OBTAINING OIL SAMPLES FOR ANALYSIS OF DISSOLVED GASES AND WATER CONTENT

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These instructions are intended for use with syringes supplied by the Doble Engineering Company in obtaining reliable oil samples for determination of dissolved gases (ASTM D 3612, IEC 60567) and dissolved water (ASTM D 1533, IEC 60814). These 50-cc syringes should be filled to approximately the 40-cc mark. The important considerations to observe in obtaining samples are as follows:

1. The apparatus to be sampled must be under positive pressure.
2. The valve through which the sample is to be taken should be thoroughly flushed (approximately 1 to 2 liters of oil). Unless otherwise noted, the samples should be taken from the bottom of the tank.
3. The filled hypodermic should contain no air, should be protected from light and packaged immediately.
4. The Sample Identification card provided should be completed and returned with the syringe.

GENERAL

The following techniques should be helpful in obtaining the sample either through the small sampling port usually mounted on the side of the apparatus drain valve or, through the drain valve equipped with the appropriate reducing fittings and hose barb. Taking the sample from the drain valve is preferable as it provides the most representative sample if flushed correctly. Do not use galvanized plumbing fittings as brass or iron are preferred. The Tygon tubing provided with the syringe will facilitate connecting the syringe to the small sampling port or to the reducing fittings and hose barb connected directly to the drain valve.

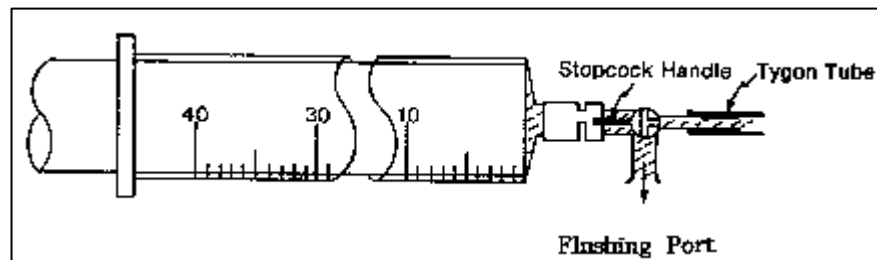
SAMPLING PROCEDURE

Clean the outside of the valve with a lint-free cloth.

With the drain-valve plug removed, drain about 1 to 2 liters of oil to flush the valve.

With the Tygon tubing connected to the drain valve or the small sampling port, adjust the valve for a gentle flow of oil through the tubing.

Connect the syringe to the tubing with the syringe stopcock open (Figure 1) to permit flushing of the stopcock (handle toward the syringe). (NOTE: The handle of the plastic stopcock always points to the closed port leaving the other two ports in open communication. Make sure the syringe stopcock is firmly seated on the syringe before taking the



sample).

FIGURE 1

Turn the stopcock slowly to the open position (Figure 2, handle in line with the flushing port) and allow 30 to 40 cc (mL) of oil to enter the syringe. Immediately close the stopcock (handle toward the Tygon tube) and turn the syringe in the vertical position.

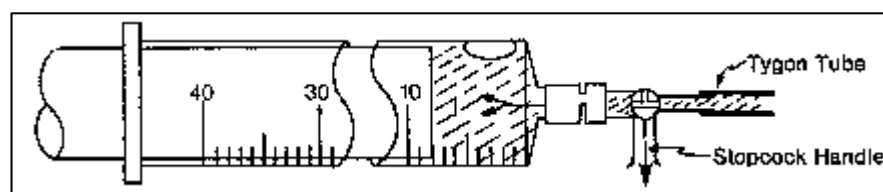


FIGURE 2

With the syringe vertical (Figure 3, stopcock up, handle away from the syringe), eject any air bubbles and carefully depress the syringe piston until all of the oil has been ejected from the syringe. Close the stopcock (handle toward the flushing port) and repeat this flushing procedure 2 to 3 more times before taking the actual sample.

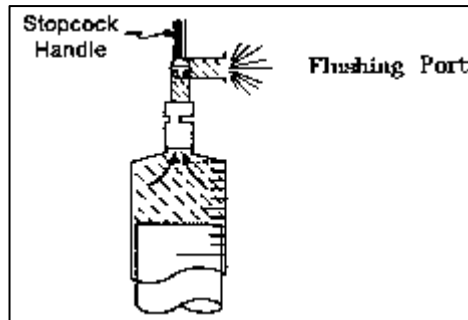


FIGURE 3

To take the actual sample, open the stopcock (Figure 2, handle in line with flushing port) and allow oil pressure to push the piston back until the syringe is filled to approximately the 40-cc mark. Do not pull the piston manually since this can result in bubble formation.

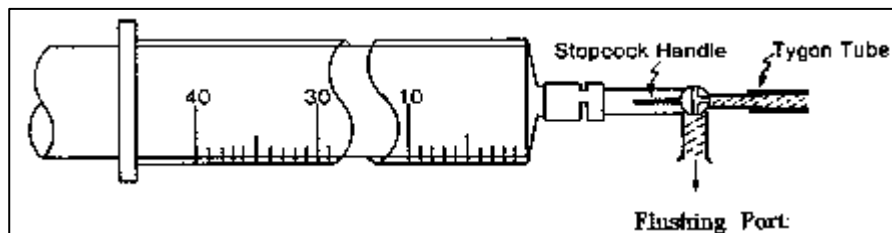


FIGURE 4

Close the stopcock (Figure 4, handle toward syringe) and separate it from the tubing and inspect for air bubbles. If air is present, discharge the air immediately with the syringe vertical (stopcock up) and then close. If there are more than just a few air bubbles then empty the syringe and repeat the process until an adequate sample has been taken.

NOTES: Care should be taken to shield the filled syringe from light, and adequate precaution should be taken to avoid breakage in transit.

Bubbles may form after sampling but, provided the sample was bubble-free initially, this will not affect subsequent analysis. Do not attempt to remove these bubbles.

Complete Sample Identification card, package syringe and card and return to:

Doble Engineering Company
Materials Laboratory
85 Walnut Street
Watertown, MA (02472-4037) U.S.A.