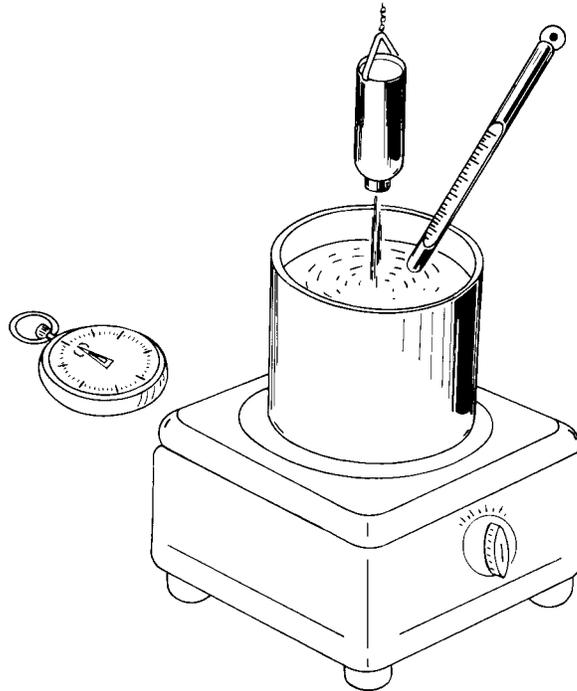


OIL VISCOMETER



The Hauck Oil Viscometer is designed to provide an easy, convenient and inexpensive way of rapidly determining the temperature to which oil should be heated in order to arrive at the proper viscosity for atomization.

OPERATION

1. Fill a 1/2-1 gallon container with a clean sample of the oil to be tested. The container must be at least 6 inches deep to allow the complete submersion of the Viscometer.
2. Heat the oil over a stove or some other heat source until the oil reaches the temperature thought sufficient to produce the proper viscosity-80 to 90 seconds, Saybolt Universal (SSU) for low pressure air atomization. The temperature required may range from 180° to 270°F. Consult your local supplier for recommended temperatures. To ensure uniform heating, vigorously agitate the oil throughout the heating process. *Never heat the oil to its boiling point.*
3. Remove the heating vessel from its heat source and submerge the Viscometer in the oil. Allow it to refill with a minimum of air bubbles.
4. Wait a few minutes for the temperature to stabilize. For proper operation, the meter's draining orifice must be at or near the oil temperature.
5. Lift the Viscometer to a depth slightly below the oil surface. Insert the thermometer into the meter to a depth of 3 inches. Stir the oil in the meter until the temperature stabilizes.
6. Read and record the temperature. Remove the thermometer.

These instructions are intended to serve as guidelines covering the installation, operation, and maintenance of Hauck equipment. While every attempt has been made to ensure completeness, unforeseen or unspecified applications, details, and variations may preclude covering every possible contingency. **WARNING: TO PREVENT THE POSSIBILITY OF SERIOUS BODILY INJURY, DO NOT USE OR OPERATE ANY EQUIPMENT OR COMPONENT WITH ANY PARTS REMOVED OR ANY PARTS NOT APPROVED BY THE MANUFACTURER.** Should further information be required or desired or should particular problems arise which are not covered sufficiently for the purchaser's purpose, contact Hauck Mfg. Co.

7. Time the duration of the oil flow through the Viscometer orifice. To accomplish this, complete the following:

NOTE

The correct flow pattern of the oil stream is depicted in figure 1. Figure 2 depicts the incorrect flow stream. If, at any time during the oil flow duration, the incorrect pattern appears, stop the operation and return to step 2 to repeat the procedure.

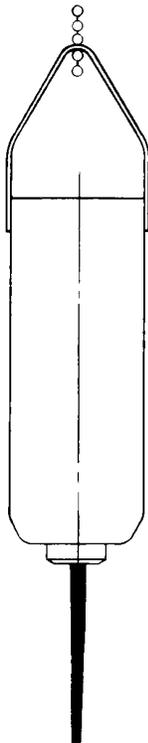


Fig. 1 – Correct Flow Pattern

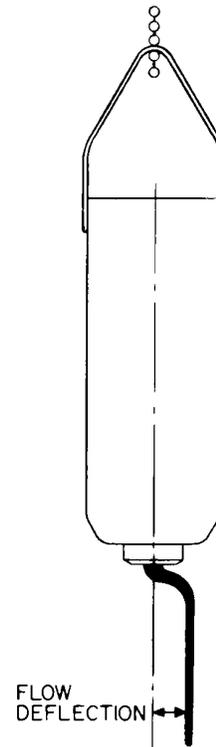


Fig. 2 – Incorrect Flow Pattern

- A. Slowly withdraw the Viscometer from the oil.
- B. Start a stop watch or note the exact time on a watch with a sweep second hand as soon as *the top of the Viscometer clears the surface of the oil.*
- C. Watch the stream of oil flowing from the bottom of the Viscometer. *At the instant the stream ceases steady flow, note the time.*
- D. Calculate the difference, in seconds, between the times obtained in steps B and C. The number of seconds which have elapsed directly corresponds to the viscosity in Seconds Saybolt Universal (SSU) of the oil sample at the test temperature recorded in step 6. For example, an elapsed time of 83 seconds at 225°F equals a viscosity of 83 SSU when the oil is heated to 225°F.

8. If the cylinder did not empty to the top of the spud or if the viscosity measured was not in the 80 - 90 SSU range, repeat steps 2 thru 7. It is good practice to run one or more additional tests at a particular temperature to ensure that no errors were made. However, if widely varying results are obtained, impurities in the oil should be suspected. Under these circumstances, carefully filter the oil and accomplish a new viscosity test.

CAUTION

Do not heat the oil samples for prolonged periods of time prior to testing lest the more volatile components be boiled off.

9. If a more accurate determination of the temperature-viscosity relationship is required, plot a test curve on A.S.T.M. viscosity graph paper from four or more tests taken at different temperatures. For best results the test points should "bracket" the desired point.

MAINTENANCE

Immediately after each use, thoroughly clean the Viscometer with a suitable solvent. Use a wooden splinter or toothpick to clean any foreign matter from the throat of the orifice. *Never use wire or metal to clean the orifice.* If soap and water are used, carefully dry the unit to prevent rusting. Exercise care to ensure that the spud of the Viscometer is not damaged.

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