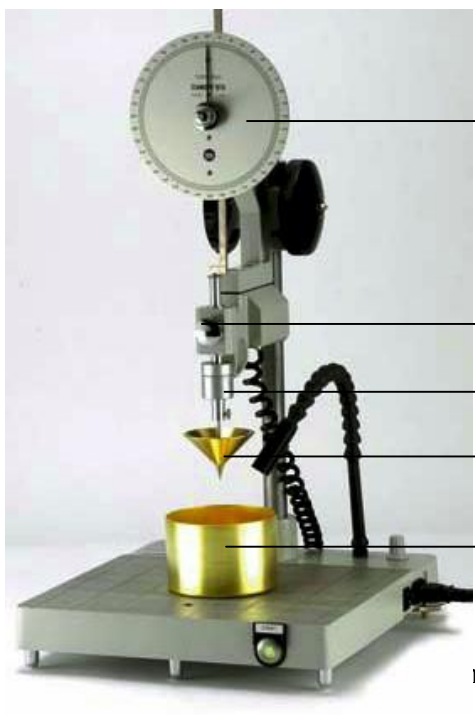
Lab 10. Determination of penetration for grease

The characteristics of lubricants may be evaluated based on some of their properties, such as: density, viscosity, vapor pressure, freezing point, acid number, etc.

Penetration is defined as the depth of penetration (expressed in 10th of milimeters) of a metallic cone with standardized shape and dimension into a solid grease sample for a period of 5 seconds.

The penetration is determined with the Cone Penetrometer or Richardson Penetrometer.



ı Penetrometer.

Procedure:

1. The flatness of the penetrometer is verified using the air-bubble level.
2. The cup is filled with solid grease and the surface is carefully flattened.
3. The cone is cleaned from solid grease coming from previous measurements.
4. The tip of the cone is positioned to touch the surface of grease.
5. The needle on the graduated scale is positioned at zero.
6. Push the release button and concomitantly start the chronometer for 5 seconds.
7. Read the indication on the graduated scale and repeat the measurements 10 times.

Experimental results

No.	Div.	Penetr. P_i [mm]	Mean $P_{i\,med}$ [mm]	$P_i - P_{i\,med}$	$(P_i - P_{i\,med})^2$	SSE $\sum(P_i - P_{imed})^2$	MSE = SSE/n
1.							

SSE = sum of squared error
MSE = mean squared error