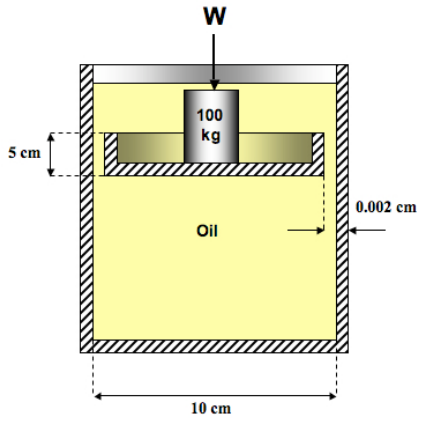
MIT Department of Mechanical Engineering
2.25 Advanced Fluid Mechanics

Problem 6.01
This problem is from "Advanced Fluid Mechanics Problems" by A.H. Shapiro and A.A. Sonin



Oil is confined in a 10 $[cm]$ diameter cylinder by a piston with a clearance of 0.0002 $[cm]$. The piston is 5 $[cm]$ long, and the oil has a viscosity coefficient of 0.05 $[kg/ms]$ and a density of 920 $[kg/m^3]$.

A total weight of 100 $[kg]$ is applied to the piston. Estimate the leakage rate of oil past the piston, in $liters/day$. Justify any approximations you use in arriving at your estimate.

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