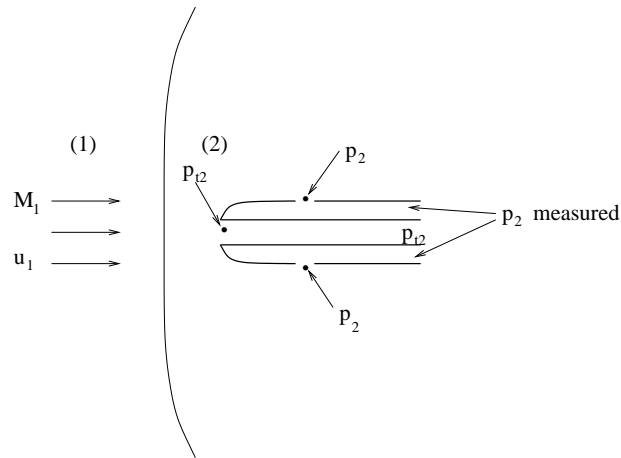


**MAE 103 Assignment 9: Due Thursday, June 6, 2002**  
**A. R. Karagozian**  
**(Please turn in at the end of the class session at 10 am)**

1. Consider the pitot static probe shown below which is immersed in a supersonic airflow. A normal shock wave will stand in front of the stagnation hole, as shown.



You are given that the pitot probe reads  $p_{t2} = 177$  kPa,  $p_2 = 152$  kPa, and the stagnation temperature behind the shock is  $T_{t2} = 300K$ . Solve for the Mach number  $M_1$  and velocity  $u_1$  upstream of the shock.

2. Problem 11.35 in Munson, et al.'s text.
3. Problem 11.46 in Munson, et al.'s text.
4. Problem 11.70 in Munson, et al.'s text.
5. Problem 11.73 in Munson, et al.'s text.
6. Problem 7.9 in Munson, et al.'s text.
7. Problem 7.17 in Munson, et al.'s text.