SHEET 3

1- (Example 6-1)
A pump supplies oil at 77 in^3/s to a 2-in diameter double acting hydraulic cylinder. If the load is 1000 lb (extending and retracting) and the rod diameter is 1 in, find

a. The hydraulic pressure during the extending stroke
b. The piston velocity during the extending stroke
c. The cylinder power during the extending stroke
d. The piston velocity during the retraction stroke
e. The cylinder power during the retraction stroke

2- (Example 6-2)
Find the cylinder force F required to move a 6000-lb weight W along a **horizontal** surface at a constant velocity. The coefficient of friction (CF) between the weight and horizontal support surface equals 0.14

3- (Example 6-3)
Find the cylinder force required to lift the 6000-lb weight W of question 2 along the direction which is 30^0 from the horizontal, as shown in figure 1. the weight is moved at constant velocity.

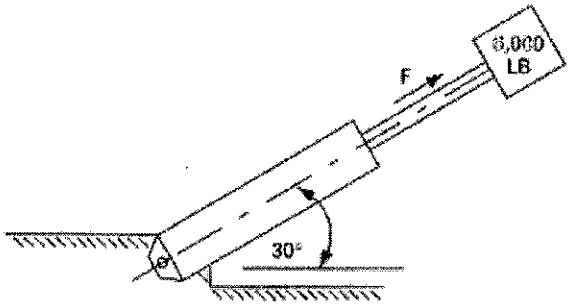


Figure 1

4- (Example 6-4)
A 6000-lb weight of the question 2 is to be lifted upward in a vertical direction. Find the cylinder force required to

a. Move the weight at a constant velocity of 8 ft/s
b. Accelerate the weight from zero velocity to a velocity of 8 ft/s in 0.50 s

5- (Example 6-5)

For the first, second and third-class lever systems of figure 2, the following date are given:

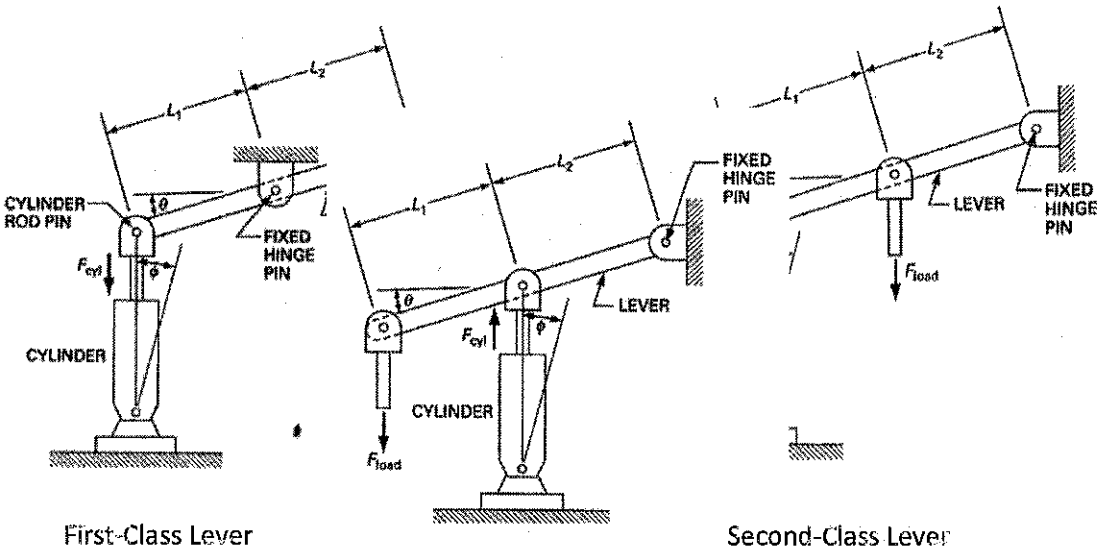
$L_1 = L_2 = 10$ in

$\phi = 0^0$

$F_{load} = 1000$ lb

Find the cylinder force required to overcome the load force for the

a. First-class lever
b. Second-class lever
c. Third-class lever



First-Class Lever

Second-Class Lever

Third-Class Lever

Figure 2