

WITH COEFFICIENT OF FRICTION  $\mu=0.2$

FORCES LEFT WEDGE:

$$\Sigma F_y = 0: 600 - F_1 \sin(15^\circ) - F_{F1} \cos(15^\circ) = 0$$

$$F_1 = 1327.42 \text{ N}$$

FORCES BALL:

$$\Sigma F_x = 0: F_1 \cos(15^\circ) - F_3 \cos(60^\circ) - F_{F2} \cos(7.5^\circ) + F_{F3} \cos(30^\circ) - F_2 \cos(82.5^\circ) = 0$$

$$\Sigma F_y = 0: F_1 \sin(15^\circ) - F_3 \sin(60^\circ) - F_{F2} \sin(7.5^\circ) - F_{F3} \sin(30^\circ) + F_2 \sin(82.5^\circ) = 0$$

$$F_2 = 1785.06 \text{ N}$$

$$F_3 = 2127.33 \text{ N}$$

FORCES RIGHT WEDGE:

$$\Sigma F_x = 0: F_3 \cos(60^\circ) + F_{F4} \cos(82.5^\circ) - F_4 \cos(7.5^\circ) = 0$$

$$\Sigma F_y = 0: F_3 \sin(60^\circ) - F_{F4} \sin(82.5^\circ) - F_4 \sin(7.5^\circ) + F_5 = 0$$

$$F_4 = 1101.86 \text{ N}$$

$$F_5 = -1480.01 \text{ N}$$

DISCOUNTING FRICTION:

FORCES LEFT WEDGE:

$$\Sigma F_y = 0: 600 - F_1 \sin(15^\circ) = 0$$

$$F_1 = 2318.22 \text{ N}$$

FORCES BALL:

$$\Sigma F_x = 0: F_1 \cos(15^\circ) - F_3 \cos(60^\circ) - F_2 \cos(82.5^\circ) = 0$$

$$\Sigma F_y = 0: F_1 \sin(15^\circ) - F_3 \sin(60^\circ) + F_2 \sin(82.5^\circ) = 0$$

$$F_2 = 3775.52 \text{ N}$$

$$F_3 = 2692.75 \text{ N}$$

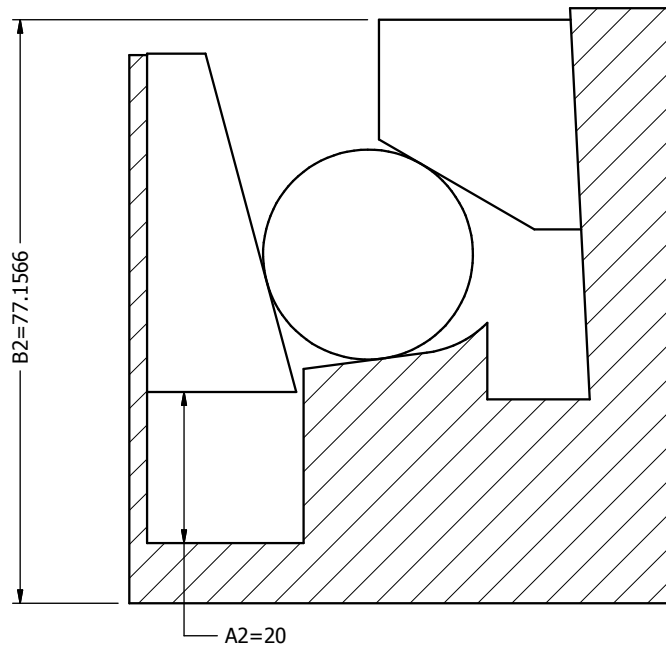
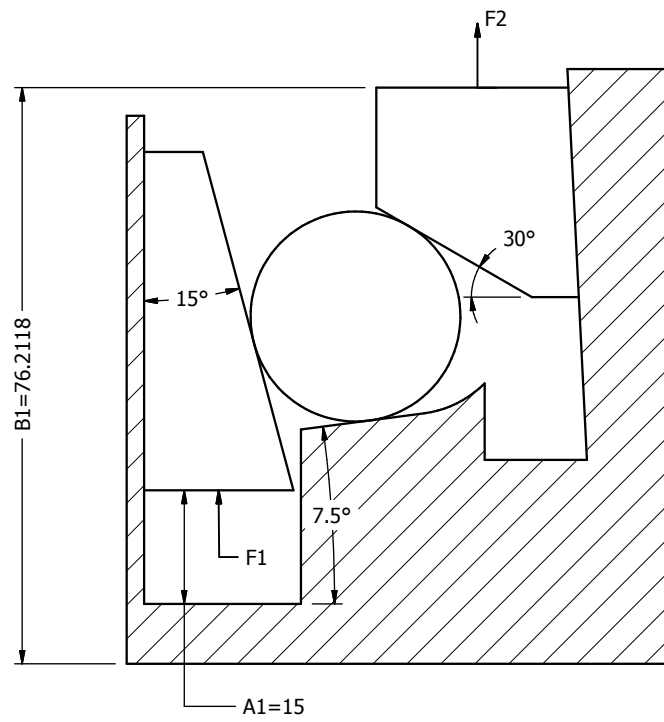
FORCES RIGHT WEDGE:

$$\Sigma F_x = 0: F_3 \cos(60^\circ) - F_4 \cos(7.5^\circ) = 0$$

$$\Sigma F_y = 0: F_3 \sin(60^\circ) - F_4 \sin(7.5^\circ) + F_5 = 0$$

$$F_4 = 1904.05 \text{ N}$$

$$F_5 = -3021.11 \text{ N}$$



$$F_1 \cdot \Delta A = F_2 \cdot \Delta B$$

$$F_2 = F_1 \cdot \Delta A / \Delta B$$

$$F_2 = 600 \cdot 5 / (77.157 - 76.212)$$

$$F_2 = 3174.6 \text{ NEWTONS}$$