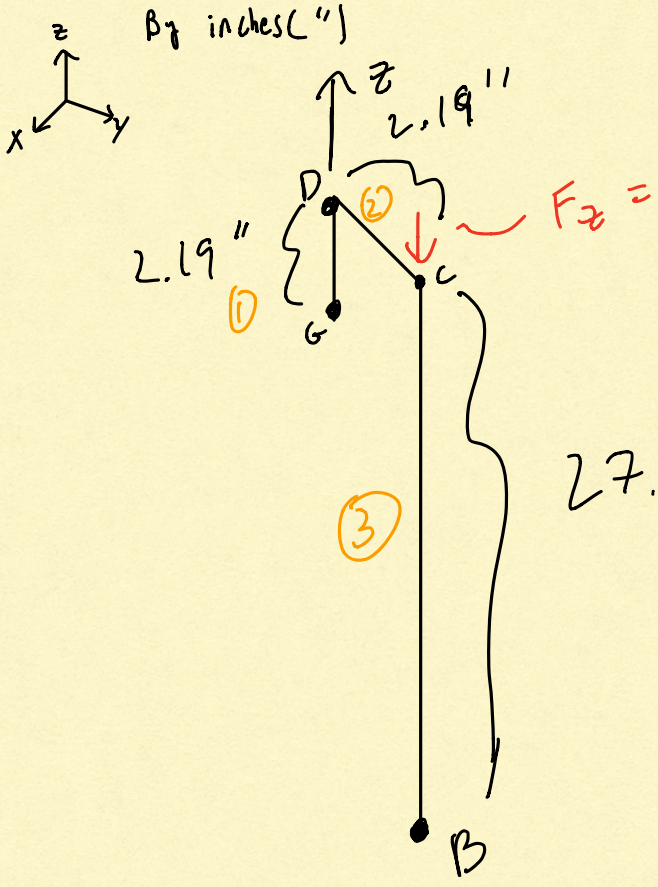
Piston #2 Branch

By inches(")



Analysis

$W = 2.538875$ lb.

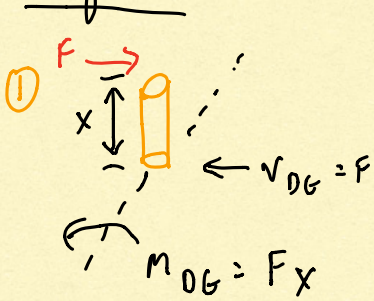
$\sum F_z = 0$;

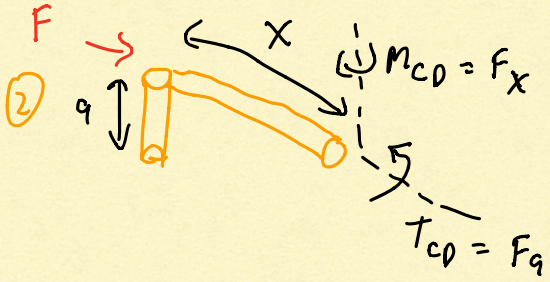
$F_z = (2.538875\ \text{lb})(27.9975")$

$= 71.0821$ lb·in

$T_x = (2.19")(F_z) = (2.19")(27.9975\ \text{lb·in}) = 61.3145\ \text{lb·in}^2$

Diagram



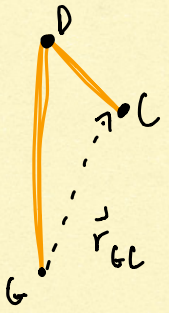


$\frac{2.19"}{2} = 1.095"$

$M = (0.12375\ \text{lb})(1.095")$

$= 0.135506$ lb·in

Continued...



$$\vec{r}_{GC} = C[0,\ 2.19'',\ 2.19''] - G[0,\ 0,\ 0]$$

$$= (2.19\hat{j} + 2.19\hat{k}) \text{ inches}$$

$$\vec{F} = \underline{[0\hat{i} + 0\hat{j} - 71.0821\hat{k}]} = -1\hat{k}$$
$$\sqrt{(71.0821)^2}$$

$$M_G = r_{GC} \times \vec{F} = \begin{bmatrix} \hat{i} & \hat{j} & \hat{k} \\ 0 & 2.19 & 2.19 \\ 0 & 0 & -1 \end{bmatrix}$$

$$= \underline{[-2.19\hat{i} + 0\hat{j} + 0\hat{k}]} \text{ lb.in}$$