

Statics Analysis of Project

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The critical position in the operation of the Portable Hitch Refrigerator is shown in figure 1 below along with the force due to the weight of the refrigerator and the reaction forces at the hitch.

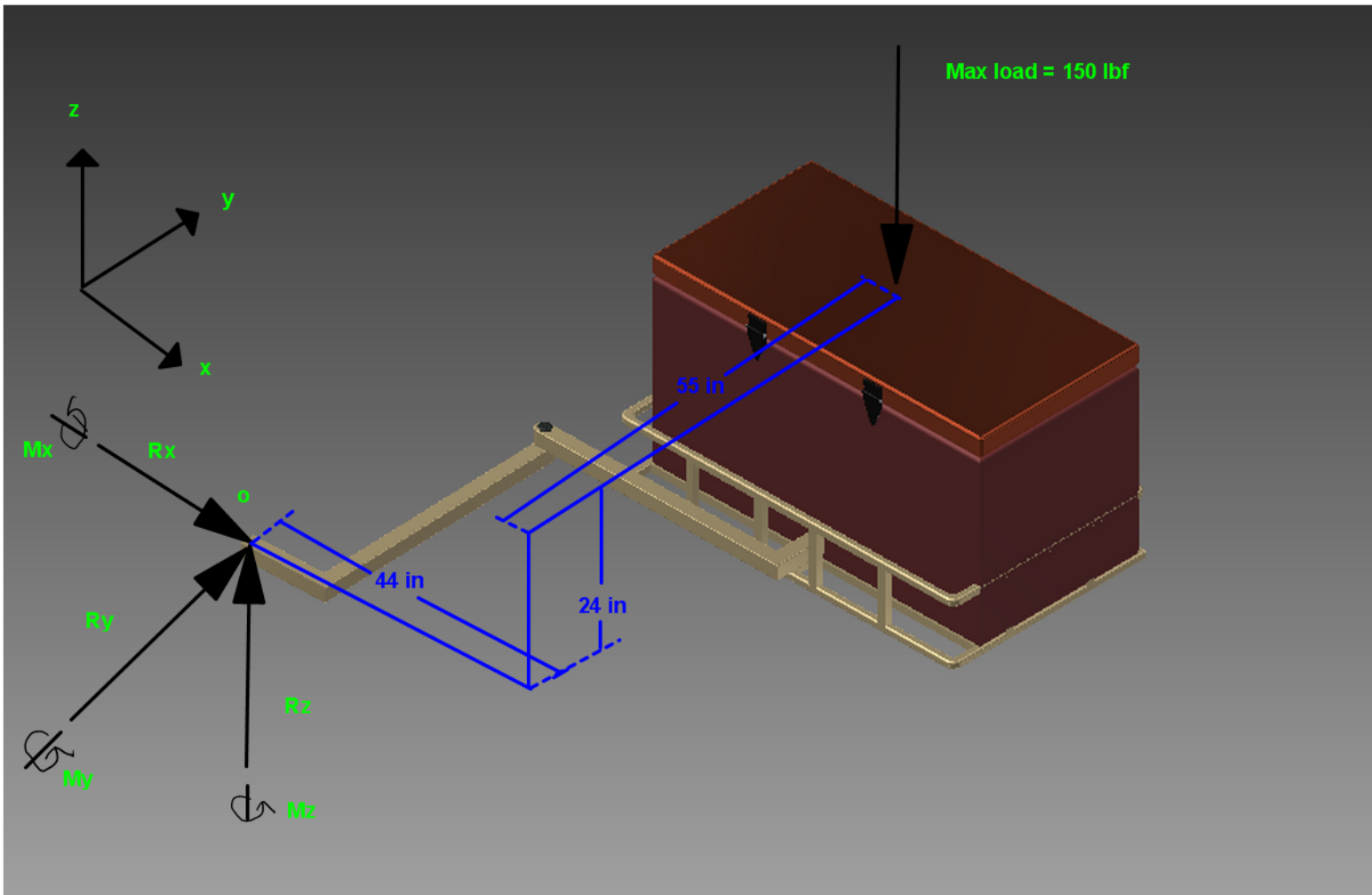


Figure 1: Critical Position

$$\sum F_x = 0 = R_x \Rightarrow R_x = 0$$

$$\sum F_y = 0 = R_y \Rightarrow R_y = 0$$

$$\sum F_z = 0 = R_z - 150 \text{ lbf} \Rightarrow R_z = 150 \text{ lbf}$$

$$\sum M_{o_x} = 0 = M_x - 150 \text{ lbf} (55 \text{ in}) \Rightarrow M_x = 8250 \text{ lbf in}$$

$$\sum M_{o_y} = 0 = M_y + 150 \text{ lbf} (44 \text{ in}) \Rightarrow M_y = -6600 \text{ lbf in}$$

$$\sum M_{o_z} = 0 = M_z \Rightarrow M_z = 0$$