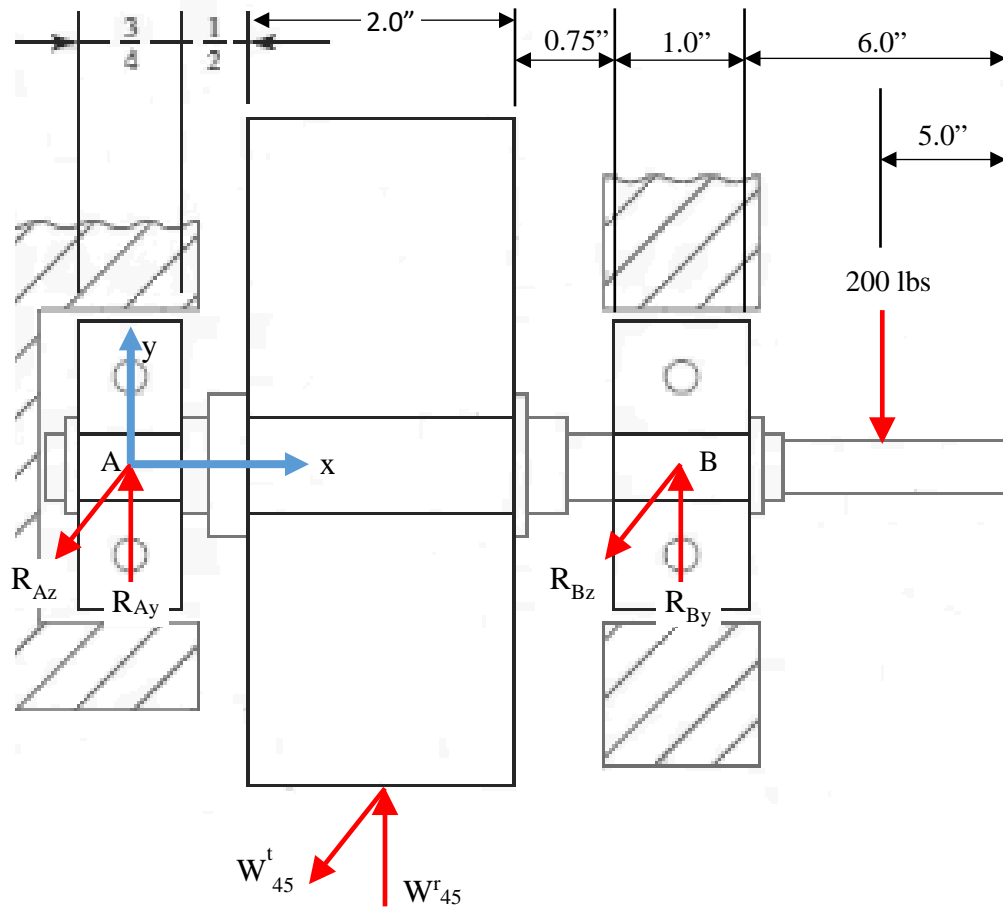# Output Shaft Length Dimensions, Loads and Reaction Forces

Note that a pulley is assumed is located near the right end of the shaft and it has a 200-pound load representing the belt tension. We will assume orientation of the 200-pound load is such that it is in the −Y direction (see figure below).

Shaft Analysis Points and Diameters to be Determined

Please note that **the gear shoulder must be on the left side of the gear** as shown below.

Analysis Point	Description
I	Left bearing shoulder
J	Transition to gear shoulder (distance from I to J is 0.25")
K	Gear shoulder
L	End of keyway for gear (distance from L to M is 0.25")
M	Gear clip
N	Transition to gear diameter (distance from N to O is 0.375")
O	Right bearing shoulder
P	Right bearing clip
Q	Transition to output shaft diameter (distance from P to Q is 0.25")
R	End of keyway in output shaft (distance from P to R is 0.5")