

ROBOTIC TOOLING SOLUTIONS

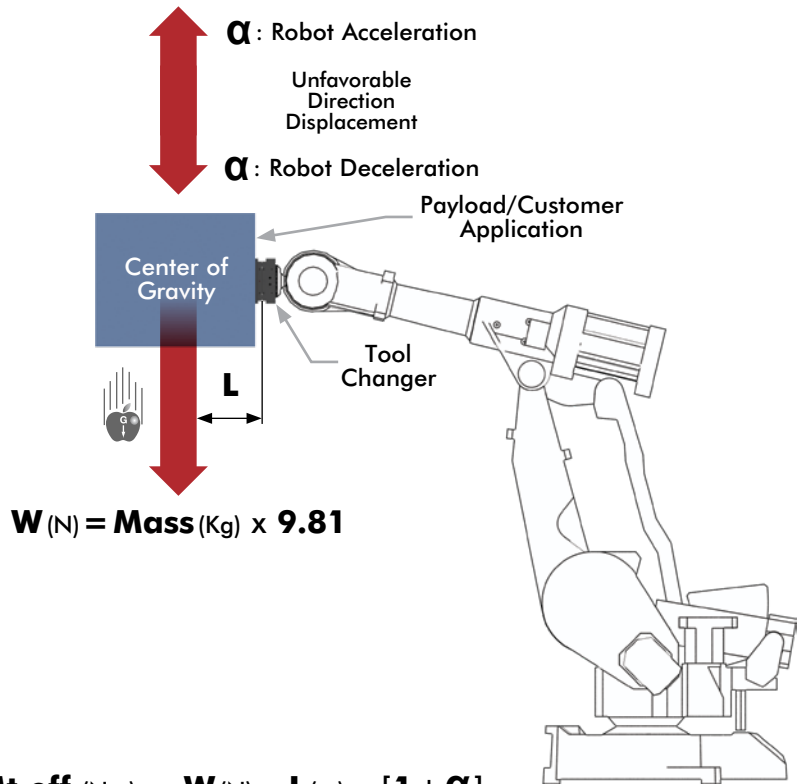
Automatic Tool Changer Sizing Guide

For tool changer sizing, the maximum effective moment during displacement will be considered. The effective moment will be calculate in the worst case of the application, and must consider:

- The weight of the tool
- The position of the center of gravity
- The dynamic effect due to the maximum acceleration or deceleration. (Emergency stop for example)

See below the simplified calculation formula to estimate the effective moment of your application.

Required Information		
M	Mass of the tool attached on the tool changer	Kg
L	Distance from the payload center of gravity to the tool changer	m
α	Maximum acceleration or deceleration of the robot	g



Effective Moment → **Mt eff (Nm) = W(N) x L(m) x [1 + α]**

CAUTION: Applications with high and wide loads: in case of heavy application, we strongly recommend to strengthen the cylindrical and diamond indexing pins, between tool changer and tool plate, by adding larger diameter pins, the farthest to the center of changer tool, incorporated into the design of the tooling.

Application Example

Application Data	
Mass of tool	90 kg
Center of gravity / Tool Changer	0.5 m
Acceleration (or deceleration) of displacement	2 g

$$Mt \text{ eff} = (90 \times 9.81) \times 0.5 \times (1 + 2)$$

$$Mt \text{ eff} = 883 \times 0.5 \times 3$$

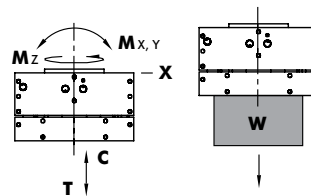
$$Mt \text{ eff} = 1324.5 \text{ Nm}$$

Loading Capacity:

Max. Tensile **T**: 2670 N [600 lb]

Max. Compressive **C**: 3560 N [800 lb]

Max. Moment (**Mx/My/Mz**) **1580 Nm [14000 in-lb]**



The obtained value 1324.5 Nm should be compared to the technical data of our products in this catalog in the "loading capacity information" section. For this application, the choice will be a RQC-400M tool changer that has a qualifying capacity, in terms of torque, of 1580Nm, over than the 1325Nm of the application.