Motor Berechnung

## Model 2 v16 Parameter

Area 1.351E+05 mm^2  
Density 0.003 g / mm^3  
Mass 379.229 g  
Volume 1.324E+05 mm^3  
Physical Material (Various)  
  
Bounding Box  
Length 187.827 mm  
Width 316.50 mm  
Height 88.287 mm  
World X,Y,Z 0 mm, 0 mm, 0 mm  
Center of Mass -3.83152 mm, 104.733 mm, 8.51491 mm  
  
Moment of Inertia at Center of Mass (g mm^2)  
Ixx = 2.440E+06  
Ixy = 3.221E+04  
Ixz = -1.799E+04  
Iyx = 3.221E+04  
Iyy = 4.456E+05  
Iyz = -3.243E+05  
Izx = -1.799E+04  
Izy = -3.243E+05  
Izz = 2.615E+06  
  
Moment of Inertia at Origin (g mm^2)  
Ixx = 6.627E+06  
Ixy = 1.844E+05  
Ixz = -5621.705  
Iyx = 1.844E+05  
Iyy = 4.787E+05  
Iyz = -6.625E+05  
Izx = -5621.705  
Izy = -6.625E+05  
Izz = 6.780E+06

## Haltemoment

### Distanz der Drehachse zum Schwerpunkt

l = 104.581 mm = 0.104581m

### Gewichtskraft

Gewicht von Modell Parameter 379.229g  
m = 0.38kg  
F = 9.81 N/kg \* 0.38kg = 3.7278N

M\_g = l \* F = 0.104581m \* 4.7088N = 0.3898570518Nm

## Beschleunigungsmoment

### Trägheitsmoment

Izz aus Modell Parameter  
J = 0,00678 kgm^2

### Winkelbeschleunigung

etwa 30° in 0.6s  
  
α = rad/s^2 = 30\*pi/180 / (0.6)  
α = 2 \* s / t^2 = 2 \* 30 \* pi/180 / 0.6^2 = 2.90888208666 rad / s^2

M\_b = α \* J = 2.9rad/s^2 \* 0.00678kgm^2 = 0.01972222054Nm

## Motordrehmoment Insgesamt

M\_tot = M\_g + M\_b = 0.3898570518Nm + 0.01972222054Nm = 0.40957927234Nm

### Referenzen

[Trägheitsmoment](http://www.maschinenbau-wissen.de/skript3/mechanik/kinetik/293-traegheitsmoment)  
[Maxon Formelsammlung](https://www.maxonmotor.de/medias/sys_master/root/8819062800414/maxon-Formelsammlung-d.pdf)

### Motoren

* futaba s3003
* robbe fs100