

# Mechanism Feasibility Design

Tutorial Session Notes

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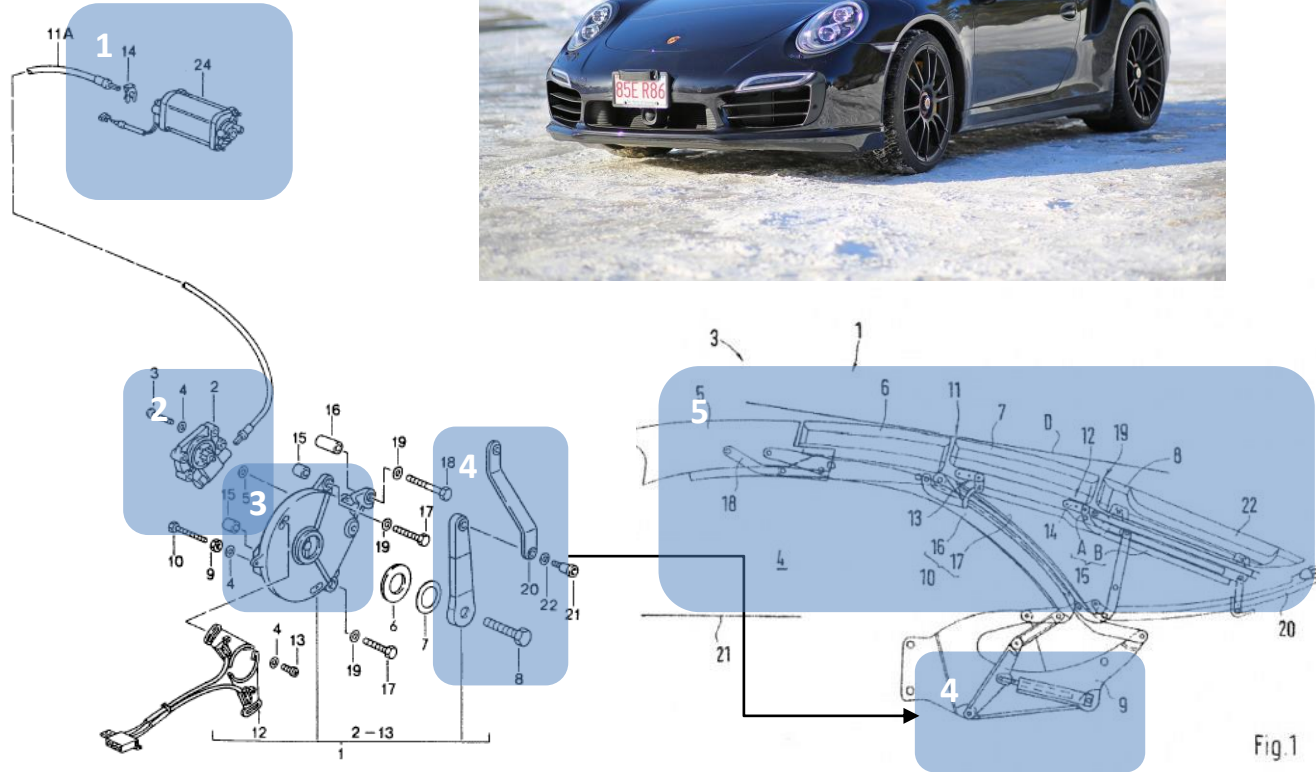
## Well done on your stage-gate submission

- Looking through them now
- Will get a couple of comments each
- **Remember:** This should all be included in your report and discussed in greater detail

# Last Week



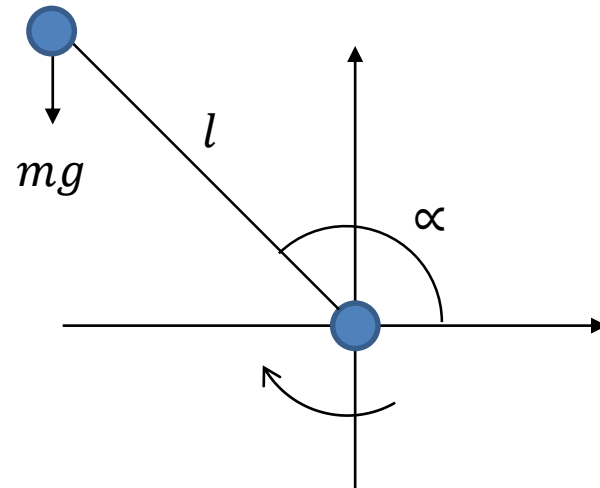
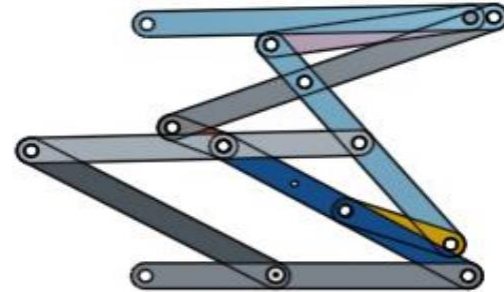
## Systems Modelling



# Boundary Calculation

What torque do you require to get the mechanism moving?

1. Assume a single mass
2. Calculate the centre of mass
3. Torque required by the pivot to get this mass moving



# Boundary Calculation

What motor and gear ratio is required to achieve this?

- Select a motor from Bosch
- Refer to your PDS when selecting the motor
- Determine the gear ratio required
- Note: you will need a gear ratio!
- Record your rationale for your choice

Bosch I-Business

Startpage Products Business Fields Trade Fairs Contact

Products

- Electric Motors
- D.C. motors with transmission
- D.C. motors without transmission
  - M4
  - API
  - CPB
  - DBM
  - DPO-K
  - GPG-M
  - GBM-S
  - GBM-M
  - GBM-L

D.C. motors without transmission

M4  
Small precision motor available in 12 V  
> To product category

API  
Fast and small motor for short time operation in 12 and 24V  
> To product category

CPB  
Motor with double shaft suitable for different kind of applications  
> To product category

DBM  
Relatively stevier 24 V motor with long life  
> To product category

DPO-K  
Fast and powerful 24 V motor  
> To product category

GPG-M  
Strong gearless motor with a fat design  
> To product category

GBM-S  
GBM small size. Fast and powerful 12 V motor for continuous use up to 145 W  
> To product category

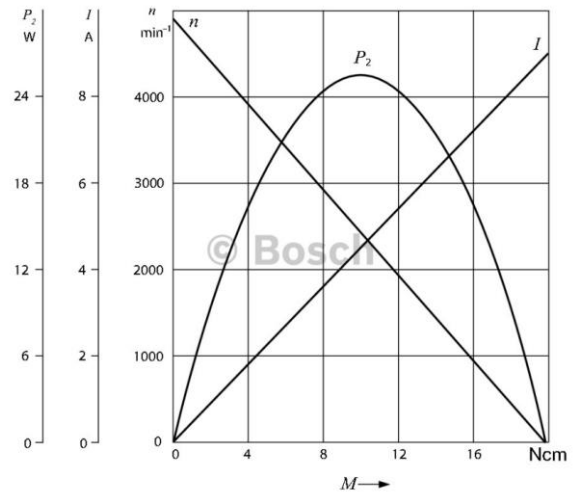
GBM-M  
GBM medium size. Fast and powerful 12 V motor for continuous use up to 220 W  
> To product category

GBM-L  
GBM large size. Fast and powerful 12 V motor for continuous use up to 250 W  
> To product category

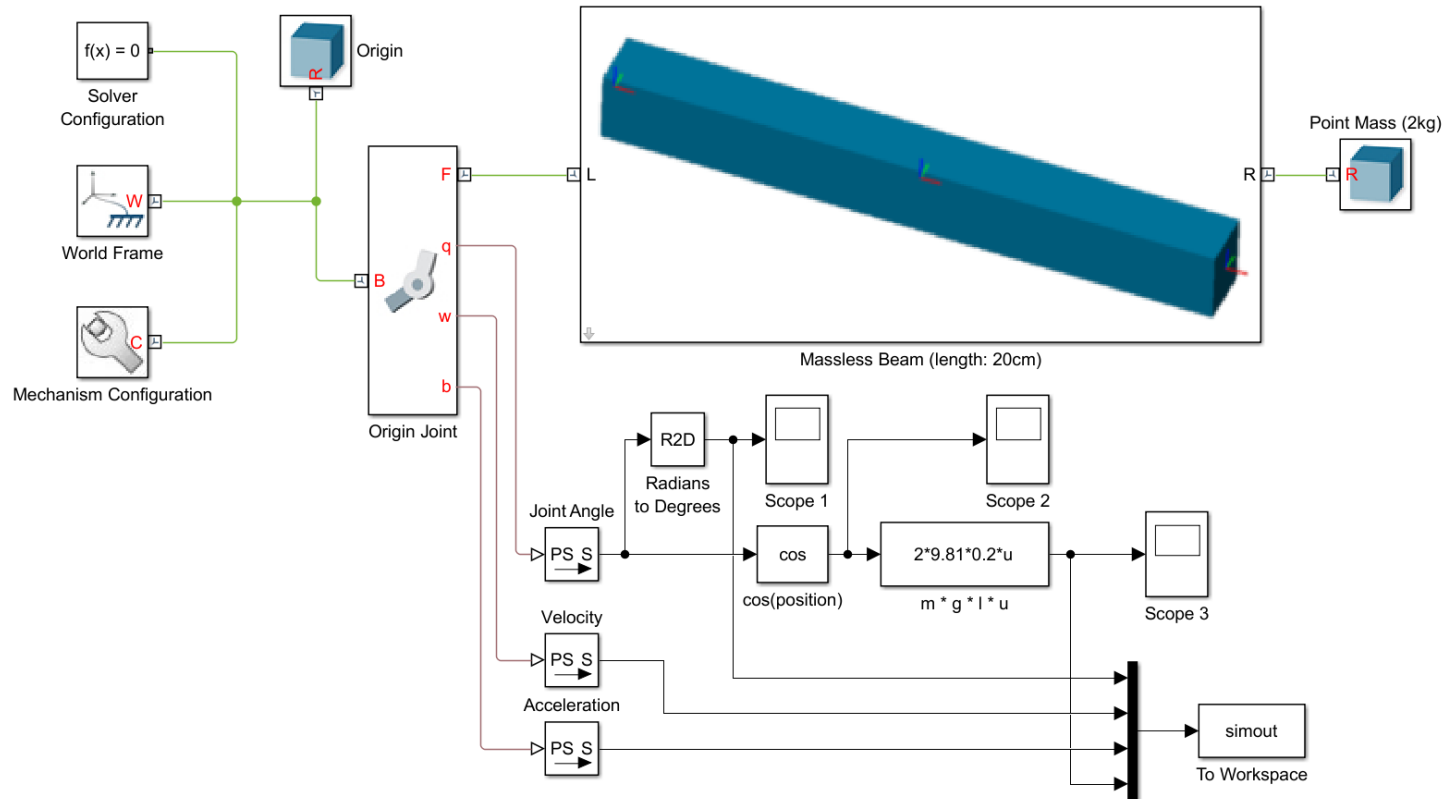
Contact us with your request  
Request form

Parameter Explanation  
Show

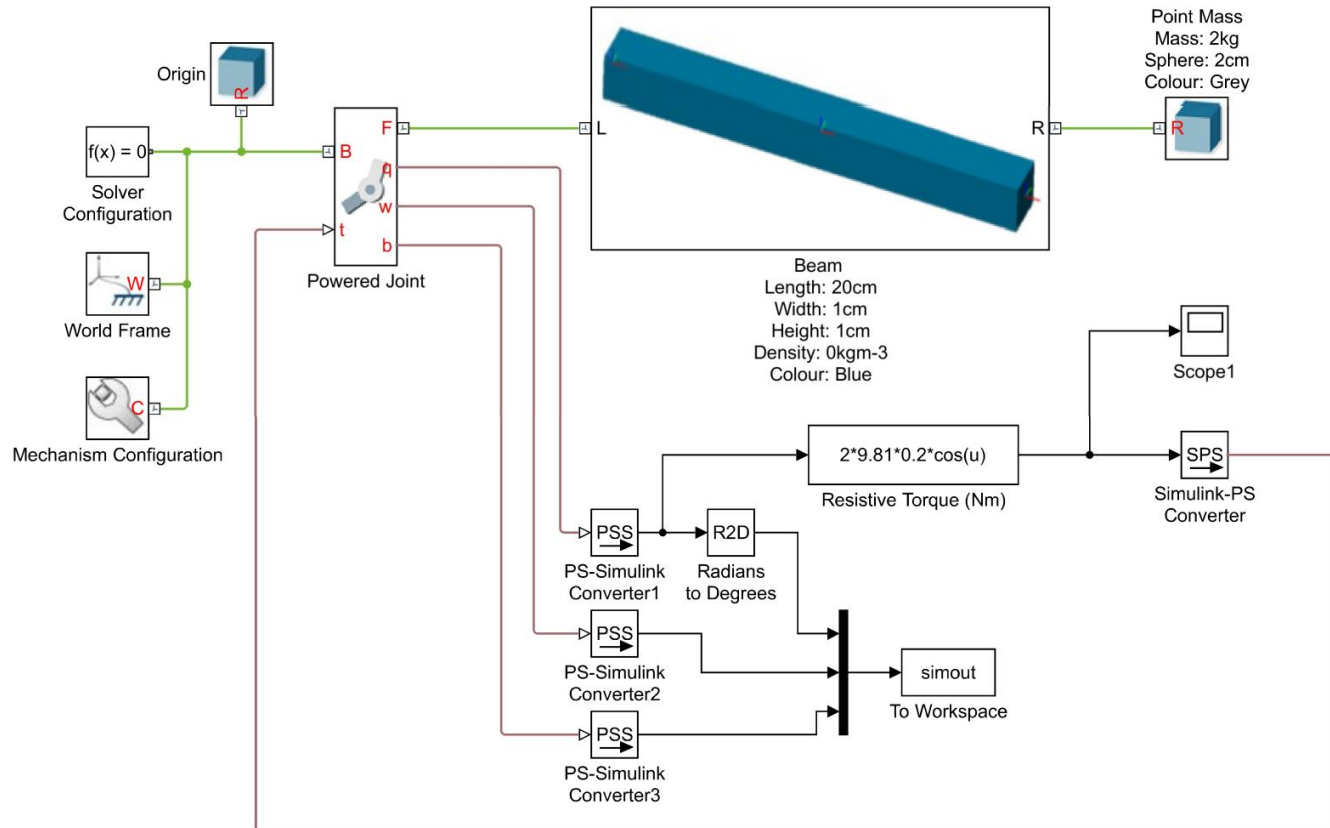
Product Liability  
Product Liability



# Simulink Modelling - Pendulum



# Simulink Modelling – Fixed Pendulum



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## This Week

- Chosen your final concept
- Estimate the torque you need to get your mechanism moving
- Select a motor from Bosch and calculate the gear ratio required to give you the torque
  - Hint: The gear ratio will be in the region of 800-1200:1
- Start creating the pendulum model in Simulink
- Use your values in the boundary calculation to make a simplified model of your mechanism



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# This afternoons lecture

1. Shaft Design Feedback
2. Deployment Modelling
  - Demo: Stopping the simulation at a specific point
  - Demo: Adding damping to a system
  - Demo: Four-bar mechanism
3. Building Your Deployment Model
4. Evaluating Motor & Gear Ratios