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Article - CS71870

## The mass of one or more bodies in your mechanism is zero. Dynamic analysis require nonzero mass for all bodies. Please review mass properties using info, Mechanism, Details".

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### Applies To

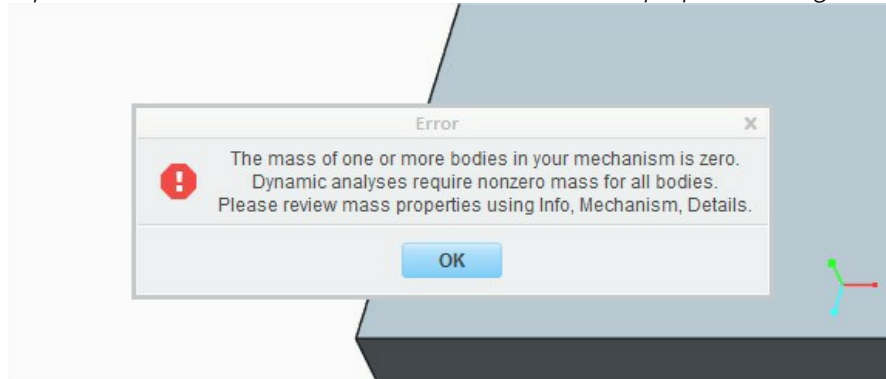
- Pro/ENGINEER and Creo Elements/Pro Wildfire 4.0 to Wildfire 5.0

- ~~Creo Parametric 1.0 to 7.0~~

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### Description

**Dynamic Analysis** cannot be run with the following error message: *The mass of one or more bodies in your mechanism is zero. Dynamic analysis require nonzero mass for all bodies. Please review mass properties using info, Mechanism, Details.*



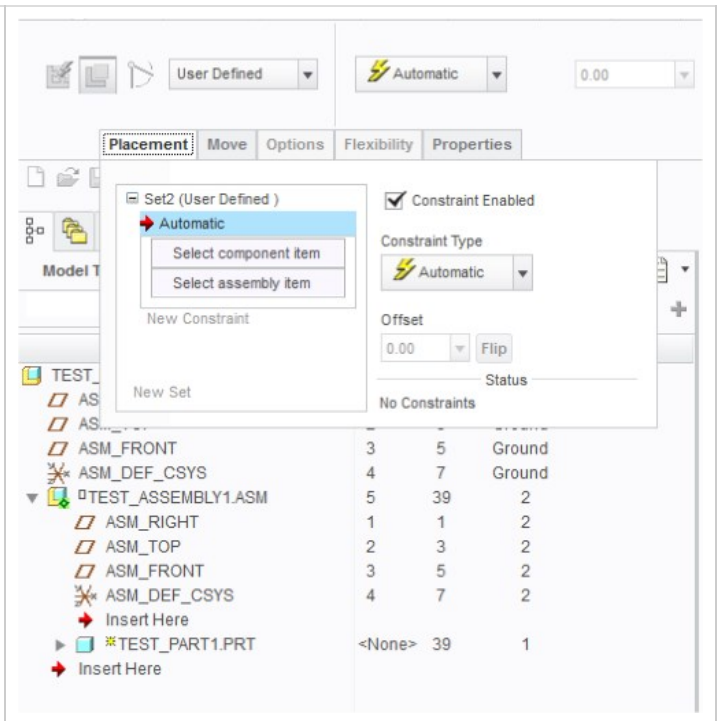
### Cause

- See TPI 129798 (<https://support.ptc.com/appserver/cs/view/solution.jsp?n=129698>).
- A Dynamic Analysis requires that all the bodies in the model have a mass property defined, but bodies definition rules can be rather complex if you have parts or subassemblies without volume.
- Bodies are calculated according to the placements of parts and subassemblies in the model. As a general rule if a part or subassembly is a partially constrained component (packaged or using mechanism connection) this component will not belong to the same body as the main assembly. Creo MECHANISM creates a new body for it:

The nested part is placed with automatic constraint.

The result is the creation of a separate body with its parent assembly.

Consequently Body 2 is a zero mass body.



- Mass properties can be affected to parts, with or without volumes. (for example it is possible to affect mass properties to a part made of curves only).
- This is not the case for subassemblies, because assembly features cannot have masses.
  - For example if you package or assemble a subassembly using mechanism connection, Pro/MECHANISM creates a new body for it. So if this subassembly does not have a fully constrained component, it's body will most likely consist of the subassembly only (without parts), and thus will have zero mass.
- In the context of on-going project with multiple users, it might be strategic to start Mechanism analysis' without the model to be completely finished. Some skeletons might introduce zero mass bodies, assigned mass being ignored according to CS133617 (<https://support.ptc.com/appserver/cs/view/solution.jsp?n=CS133617>).

## Resolution

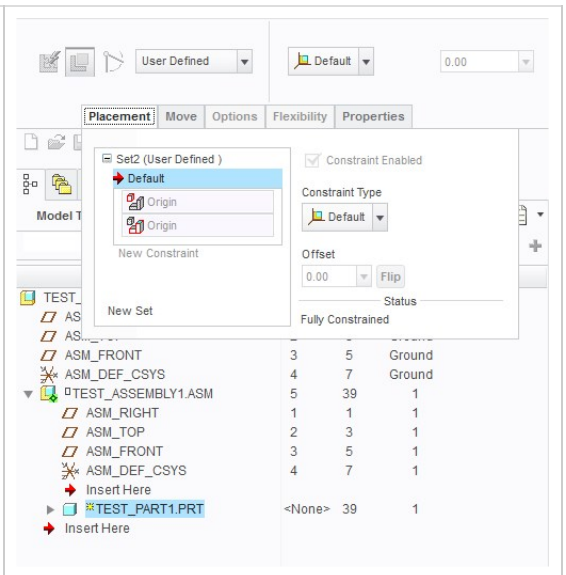
As a resolution:

find the zero mass bodies by **Info > Mechanism > Details** (see also CS234544

(<https://support.ptc.com/appserver/cs/view/solution.jsp?n=CS000234544>)) and scan the report

For nested models:

Edit Definition the nested model and change the constraint to something that will make them a unique body.  
 In the example, the Default constraint bolt the subassembly and the nested part together (body 1).



- About skeleton and assigned mass, a workaround consists in creating dummy geometry and attach it to the skeleton as a calculated mass is required.

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