

The logo for SVS FEM features the text "SVS FEM" in a bold, black, sans-serif font. The text is positioned on a yellow horizontal bar that has a slight gradient and a thin black line underneath it. The background of the slide is white with a repeating pattern of light gray rectangles.

**SVS FEM**

## **Body To Body Distance ACT**

**Your partner in computing**

# — Description

Modul: Mechanical

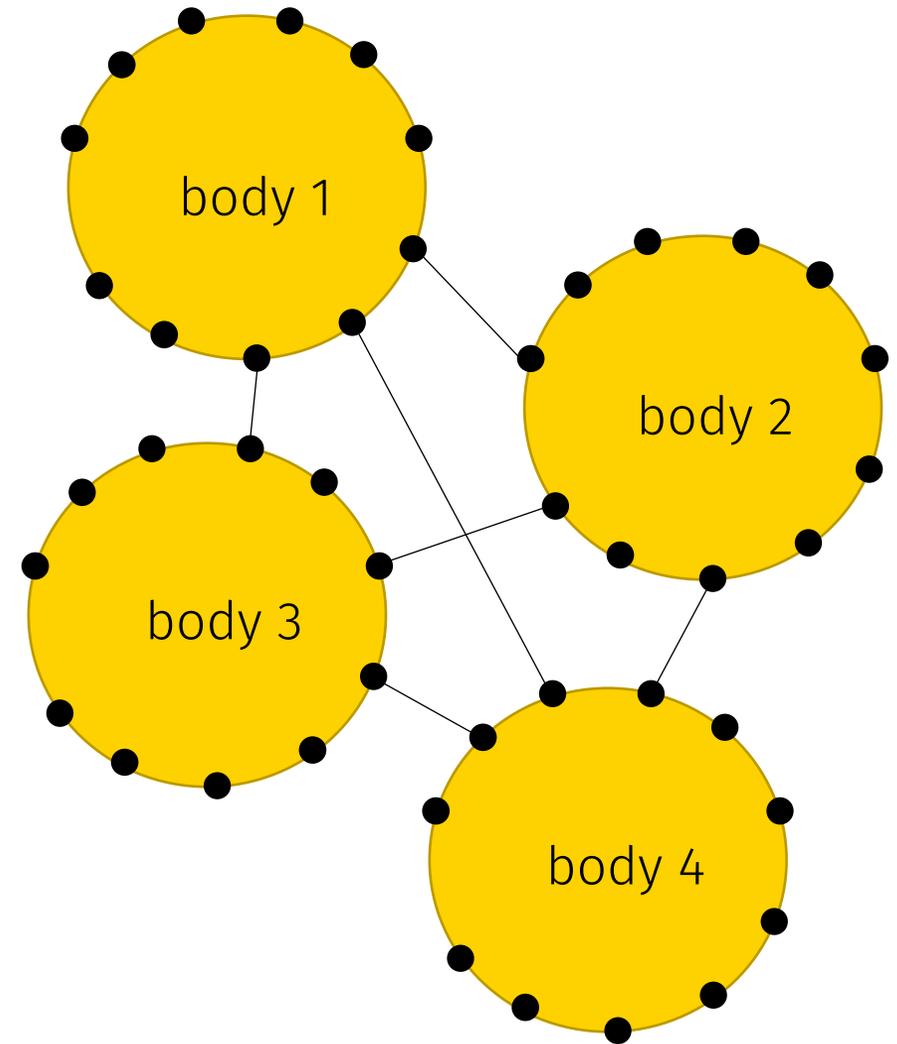
The ACT extension calculates nodal distance between all selected bodies over whole solution time history ...

## Assumptions:

- 3D
- uses displacement
  - without any scale factor
  - evaluated over solution time history
- nodal distance
  - automatic dividing selection to bodies (couples)
  - node-to-node distance (nearest nodes)
  - finer mesh => more accurate distance
  - only external nodes are used
- contact penetration
  - basic Ansys contact is more precise for evaluation of small gaps and small penetration, because projection method is used

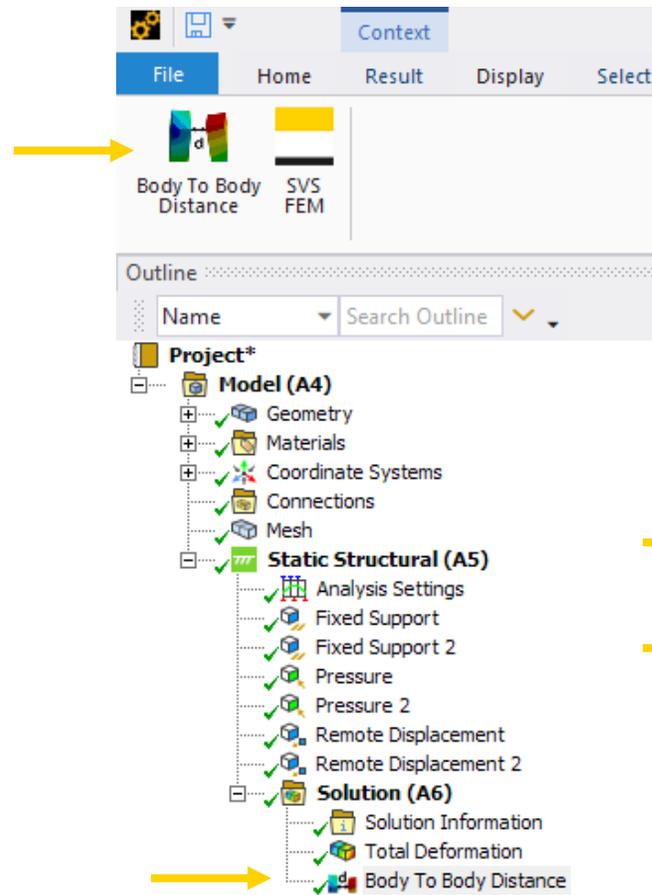
Example:

4 bodies => 5 couples => 5 distances



# Workflow

1. Install and load ACT
2. Use Body To Body Distance button
3. Setup Geometry Scoping
  - which nodes will be used
4. Search Couples
  - if you would like see all distances between all bodies (each-to-each)
  - or only one distance between closest bodies
5. Evaluate the Body To Body Distance object



The screenshot shows the 'Details of "Body To Body Distance"' dialog box. The 'Geometry' section is expanded, showing 'Scoping Method' set to 'All Bodies'. The 'Definition' section is also expanded, showing 'Bodies' set to 'Attached to Selection', 'Search Couples' set to 'Only Nearest Body', 'Distance Method' set to 'Nodal Distance', and 'By' set to 'Time'. The 'Info' section shows 'Bodies' as 3 and 'Couples' as 3. The 'Results' section shows 'Minimum' as 7.8689e-003 and 'Maximum' as 8.9323e-003.

Details of "Body To Body Distance"	
<b>Geometry</b>	
Scoping Method	All Bodies
<b>Definition</b>	
Bodies	Attached to Selection
Search Couples	Only Nearest Body
Distance Method	Nodal Distance
By	Time
<input type="checkbox"/> Display Time	0.36667 s
<b>Info</b>	
Bodies	3
Couples	3
<b>Graphics</b>	
Show Line Automatic	Yes
Show Only Nearest	Yes
Show Now	Click to show ...
<b>Results</b>	
<input type="checkbox"/> Minimum	7.8689e-003
<input type="checkbox"/> Maximum	8.9323e-003
Minimum Occurs On	SYS\Solid
Maximum Occurs On	SYS\Solid

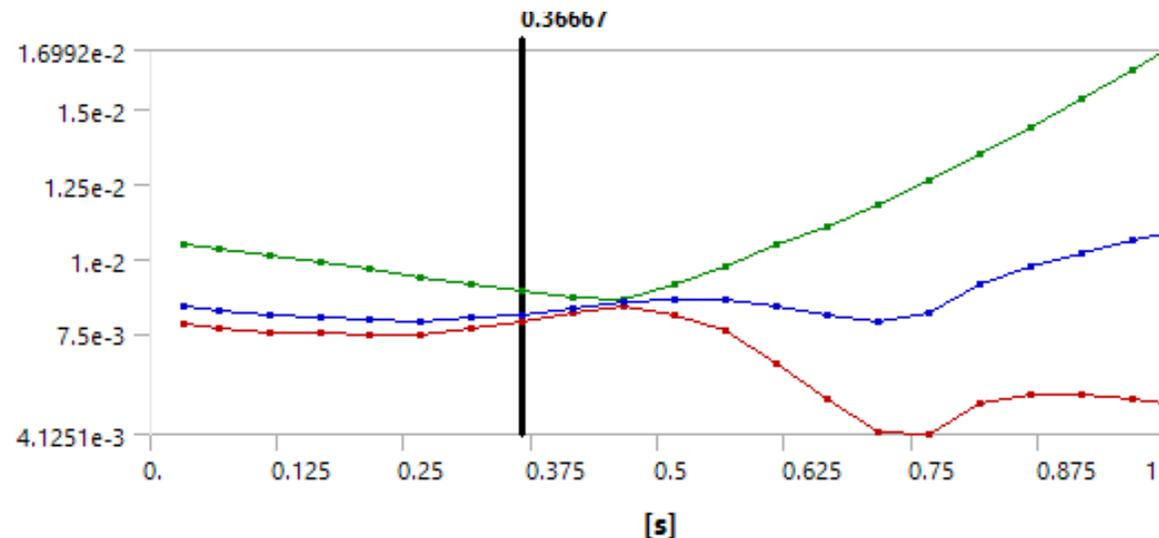
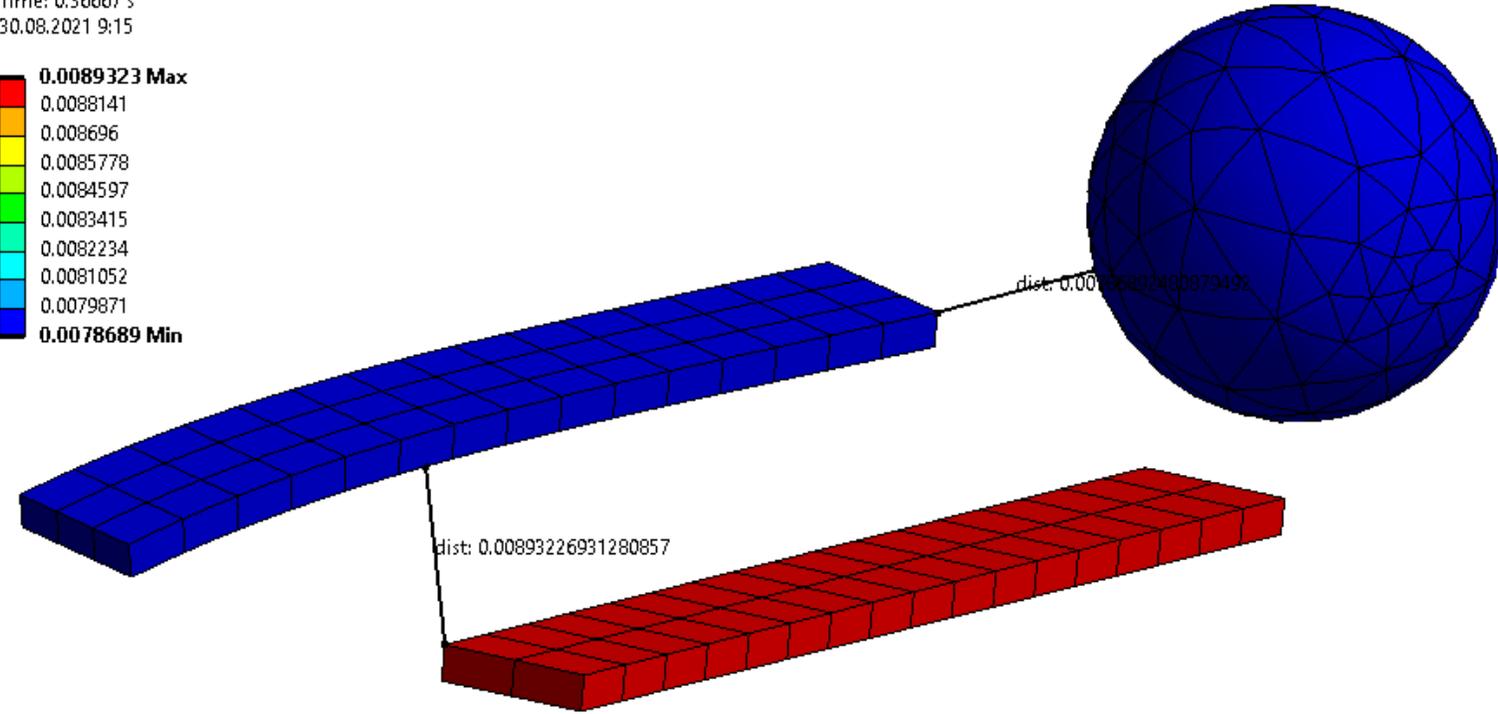
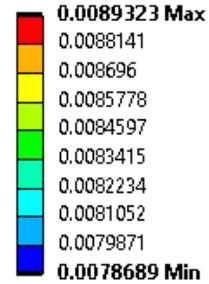
# Results

1. Graph and Tabular Data
  - min-average-max distance progress over solution time history
  - retrieving a time

2. Graphics

- contour plot where colour shows minimal distance for a body
- additional graphics (line and text) show connecting line between closest points and writes their distance for current time point

A: Static Structural  
Body To Body Distance  
Expression: RES1  
Time: 0.36667 s  
30.08.2021 9:15



**Thank you for using  
SVS FEM ACTs**

**SVS FEM**

**[www.svsfem.cz](http://www.svsfem.cz)**