



SOLIDWORKS Motion Simulation Checklist

Disclaimer: Once you have prepared your model for analysis, this checklist can be followed as a general process. Your needs may vary based on your criteria. If you'd like to learn more about how to effectively use SOLIDWORKS Simulation, GSC offers a number of in-person and online training, as well as consulting services to help you reach your business goals faster.

1. Setup

Match the study to reality as much as possible.

- As needed, modify mates to represent motion of the system
- Add local mates, if necessary
- Add motors
- Add springs
- Add dampers
- Add forces
- Add gravity
- Add contacts

2. Running

- Check the study properties to set the desired frame rate for your event. You will need 160 frames for a smoothly animated 5 seconds (the physical time may be different). Start with a frame rate of 160/length of your study.
- Choose a solver. GSTIFF is a good general purpose solver to start with. SI2 is a better solver if concerned more specifically with velocities and accelerations.
- Run the study.

3. Troubleshooting

Try these, then rerun your analysis.

For convergence failure:

- Try a different solver.
- Lower the required accuracy.
- Shrink the maximum integrator time step.

For poor analysis quality:

- Ensure inputs (motors, forces, springs, etc.) accurately represent reality.
- Increase frame rate.
- Increase quality of the contact resolution.

For long-running analysis:

- Increase minimum integrator step size.

For analysis missing quick occurring events like impacts:

- Increase frame rate. Or, decrease maximum integrator step size to the same order of magnitude of the events.

4. Check Results

Did you get what you want?

- Plot the results you need. If they look discrete rather than continuous and/or seem to be missing the maximums and minimums you were expecting, see troubleshooting for poor analysis quality.
- Look at the motion results and decide if it looks correct. If it doesn't, you may be seeing bad representations of the setup. See troubleshooting for poor analysis quality.