

Adams 2007 r1

Release Guide

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Preface

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Welcome to Adams 2007 r1

Thank you for purchasing Adams 2007 r1 products. The Adams 2007 r1® is motion simulation software for analyzing the complex behavior of mechanical assemblies. With it, you can test virtual prototypes and optimize designs for performance, safety, and comfort, without having to build and test numerous physical prototypes.

The major aspects of Adams include the ability to transfer loads and motion information from Adams to MD Nastran for stress, durability, vibration and harshness analysis.

About MSC.Software

Overview

MSC.Software Corporation is the leading global provider of virtual product development (VPD) tools, including simulation software and professional services. MSC.Software helps companies make money, save time, and reduce costs associated with designing, testing, producing, and supporting manufactured products.

MSC.Software works with thousands of companies worldwide, in hundreds of industries, to develop better products faster by using information technology, software, and services to enhance and automate the product design and manufacturing process. Simulating your product performance reduces development costs, time to market, and warranty costs.

About Virtual Product Development and Adams

You've heard it before: manufacturing companies today face intense global competition, demanding customers, fragmented markets, increasing product complexity, compressed product cycles, price and profit pressures, strict regulatory and liability environments, systems integration and supply chain issues, skyrocketing costs of testing and physical prototyping, and on and on...

What you don't often hear, though, is a strategy for enabling your company to improve your new product development process to meet these challenges.

Whether you are delivering airplanes, automobiles, ships, biomedical devices, golf clubs or children's toys to your customers, MSC.Software's goal is to help you improve your new product development process, allowing you to be significantly better at your concept development, design, testing, and production activities through the application of VPD.

VPD is an environment that uses an integrated combination of both simulation software technology and traditional techniques to design, test, manufacture, and support products. The result is that cost-effective designs that meet all performance, safety, durability, and reliability requirements can be brought to market in less time and for less cost.

Adams, as part of VPD, is focused on enhancing your ability to make better product development decisions, explore innovative design alternatives, and consistently get the product right. It is the world's most widely used mechanical system simulation software. It enables you to produce virtual prototypes, realistically simulating the full-motion behavior of complex mechanical systems on your computers and quickly analyzing multiple design variations until an optimal design is achieved. This reduces the number of costly physical prototypes, improves design quality, and dramatically reduces product development time.

Technical Support

For help with installing or using an MSC.Software product, contact your local technical support services. Our technical support provides the following services:

- Resolution of installation problems
- Advice on specific analysis capabilities
- Advice on modeling techniques
- Resolution of specific analysis problems (e.g., fatal messages)
- Verification of code error.

If you have concerns about an analysis, we suggest that you contact us at an early stage.

You can reach technical support services on the web, by telephone, or e-mail.

Web

Go to the MSC.Software website at **www.mscsoftware.com**, and click on **Support**. Here, you can find a wide variety of support resources including application examples, technical application notes, available training courses, and documentation updates at the MSC.Software Training, Technical Support, and Documentation web page.

In addition, we provide several excellent sources of online information:

- **Knowledge Base** - Find solutions to problems in this repository of troubleshooting tips, examples, and frequently asked questions. To access the knowledge base, go to:
<http://support.mscsoftware.com/kb/>
- **VPD Community** - The VPD community is where to go when you are looking for peer support, as well as technical expertise. Many of our consultants, developers, and technical support staff monitor the forums. To sign up for the forums, go to:

<http://forums.mscsoftware.com>

Then:

- To view the Adams discussions, select Adams.
- To view product alerts and company news and events, select MSC News.

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Send a detailed description of the problem to the email address below. You should receive an acknowledgement that your message was received, followed by an email from one of our Technical Support Engineers.

Training

The MSC Institute of Technology is the world's largest global supplier of CAD/CAM/CAE/PDM training products and services for the product design, analysis and manufacturing market. We offer over 100 courses through a global network of education centers. The Institute is uniquely positioned to optimize your investment in design and simulation software tools.

Our industry experienced expert staff is available to customize our course offerings to meet your unique training requirements. For the most effective training, The Institute also offers many of our courses at our customer's facilities.

The MSC Institute of Technology is located at:

2 MacArthur Place
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Phone: (800) 732-7211
Fax: (714) 784-4028

The Institute maintains state-of-the-art classroom facilities and individual computer graphics laboratories at training centers throughout the world. All of our courses emphasize hands-on computer laboratory work to facility skills development.

We specialize in customized training based on our evaluation of your design and simulation processes, which yields courses that are geared to your business.

In addition to traditional instructor-led classes, we also offer video and DVD courses, interactive multimedia training, web-based training, and a specialized instructor's program.

Course Information and Registration

For detailed course descriptions, schedule information, and registration call the Training Specialist at (800) 732-7211 or visit www.mssoftware.com.

Internet Resources

MSC.Software (www.mscsoftware.com)

MSC.Software corporate site with information on the latest events, products and services for the CAD/CAE/CAM marketplace.

MSC.Software Store (store.mscsoftware.com)

store.mscsoftware.com is a virtual marketplace where clients can find engineering expertise, and engineers can find the goods and services they need to do their job

1

What's New

- Overall Product Improvements
- What's New

Overall Product Improvements

There are many reasons why you should use Adams, including:

Product Integration

- Nastran Modal Export for frequency domain stress recovery in MSC.Nastran.
- Support for Adams/Car applications in Adams/Solver (C++) to obtain improved robustness, greater accuracy, and further opportunities for high performance through parallel processing.

New Capabilities

- Faster simulations for sphere-to-solid 3D contact applications
- Run-time aggregate mass computation for monitoring center-of-mass and inertia of assembled model or sets of parts.
- Tire testrig for visualizing effects of tire properties and to compare tire model performance.
- Dynamic suspension testrig in Adams/Car which allows RPC III file input for motion and force.
- Stress and strain frequency response function (FRF) for flexible body vibration analysis.

Other Additions

- Reference guide for Adams/View command language.
- Improved quality across entire Adams software suite.
- File collection utility for remote job submission (experimental feature).

What's New

The following are highlights of additions to existing products. For Known Issues and updated Release Notes, look for Adams 2007 r1 on the Support site

<http://support.mscsoftware.com>

Adams/Car

Dynamic Suspension Testrig

Adams/Car offers you the possibility to run dynamic suspension analyses. This event is available from the **Simulate** Menu under **Suspension Analysis -> Dynamic**. The testrig has been modified to support vertical motions and forces on the left and right jacks. You can define arbitrary solver functions for each jack, or reference an RPCIII file. Choosing the option 'arbitrary' function, allows you to enter a runtime function expression that will be used by the motion/force. Typically the function expression will be a function of time, for example an impulse, a simple harmonic function or a frequency sweep.

Alternatively, by choosing an RPCIII file as input, your motion/force will be governed using a durability function called INTERP. An example RPCIII file has been added to the loadcases.tbl car shared database table. The INTERP function returns the interpolated value (using cubic interpolation) of the spline statement. The spline references the RPCIII file. You will have to select the type of vertical excitation: displacement, acceleration, velocity or force. In addition to the vertical jack motions/forces, it is possible to define a function for steering motion therefore combining the vertical excitation with steering sweeps.

For an example, see Knowledge Base Article [1-43315482](#).

http://support.mscsoftware.com/kb/results_kb.cfm?S_ID=1-43315482

C++ Solver Support for Adams/Car Simulations

Any modeling methods or entities supported by the Fortran Solver and used by Adams/Car that were not supported in past releases of C++ Solver have now been added to the C++ Solver. We expect that you will see improved solver robustness for many models as well as new opportunities for performance improvement with the availability of features unique to the C++ Solver, including the HHT integrator, adaptive Jacobian pattern, and SMP for multi-threaded parallel processing.

For an example, see Knowledge Base Article [1-KB12723](#).

http://support.mscsoftware.com/kb/results_kb.cfm?S_ID=1-KB12723

The Adams/Solver will switch to the C++ Solver as the default solver in a future release of the Adams/Car. In the meantime we encourage you to begin using the C++ Solver for your simulations and to give us your feedback. Please log on to our web portal at

<http://support.mscsoftware.com/servicerequest/> to submit your feedback and/or suggestions for improvement.

Solver Settings in Assembly File (1-FDB47206)

Now you can define equilibrium and dynamics solver settings in your assembly and be sure that the values will be associated to the assembly and saved in the .asy file. This ensures data and simulation results persistency in case you defined solver settings different than the defaults ones. The assembly file writer now outputs the values of the equilibrium and integrator settings into the assembly file if they are different than the default ones. Once you reopen that assembly file the settings will be modified. The list of solver parameters supported in the assembly file follows below:

```
INTEGRATOR [string]
TLIMIT [real]
EQUILIBRIUM_MAXIT [integer]
FORMULATION [s]
CORRECTOR [s]
INTERPOLATE [s]
EQUILIBRIUM_ERROR [r]
ALIMIT [r]
STABILITY [r]
IMBALANCE [r]
DYNAMICS_ERROR [r]
HMAX [r]
HINIT [r]
HMIN [r]
ADAPTIVITY [r]
DYNAMICS_MAXIT [i]
```

Support for Static Only Analysis (1-FDB52544, 1-FDB25771)

Adams/Car now offers a simple static only full vehicle analysis. This event is available from the **Simulate** Menu under **Full-Vehicle Analysis ->Static** and **Quasi-Static Maneuvers -> Static Equilibrium**, and supports all the different quasi-static prephase set-up options:

- None
- Normal
- Settle
- Straight
- Skidpad

Static-only full vehicle analysis is useful for debugging models or for extracting data from models. The analysis results do not contain time-varying information, but only the initial configuration and the equilibrium positions. Animation should display frames corresponding to the various equilibrium configurations. Finally, you can optionally perform a linear analysis following any of the static prephase analyses.

Documentation

Example for calculating Driving Machine braking parameters

To obtain good closed loop braking control of your vehicle model you must compute parameters needed by the Driving Machine. This article explains how to calculate the maximum brake torques for your vehicle, and how to ensure that for a braking demand of 100 your brake subsystem produces the maximum brake torque.

Obtaining good closed-loop braking control using the Driving Machine Solution#: [1-24626031](#).

http://support.mscsoftware.com/kb/results_kb.cfm?S_ID=1-24626031

Documentation of Event Consubs

Documentation for event consubs is now available, please refer to the “Controlling Analyses using CONSUBS” section of “Running Analyses” in the Adams/Car Help.

- Con950 (suspension analysis)
- Con910, 917 (Vel IC)
- Con900 (Force adjust)
- Con1010,1020,1030 (Qstatic)

Adams/Car Ride

Maintenance

This release of Adams/Car Ride is primarily a maintenance release where the focus has been on improving the quality and robustness of Adams/Car full-vehicle simulations.

Adams/Chassis

Subsystem & Property Usability Improvements

Several usability improvements have been implemented in the graphical user interface and at a subsystem level to make things easier for you when dealing with component properties.

1. Property files merged to subsystem files

In previous releases of Adams/Chassis the subsystem file contained only a reference to the property file. Now the properties themselves may be embedded within the subsystem file, for example the .xml file would contain a new tag <SpringProperties...> under which would be the spring properties data.

2. Enhanced graphical user interface

Managing of property files used by a subsystem is made easier with this release. A "Create New" button can be used to define new component properties and the "Import" and "Export" buttons can be used to easily share properties with other Adams/Chassis users. Multiple properties for components can now be included in your subsystem. Each set of properties you include will be presented on the screen in a list format with a handy checkbox for selecting the property you want to use.

3. Fewer separate tabs

Adams/Chassis interface uses fewer separate tabs so as to achieve a nicer organization of property information that is capable of fitting on one screen.

For an example, see Knowledge Base Article [1-43315518](#).

http://support.mscsoftware.com/kb/results_kb.cfm?S_ID=1-43315518

4. Modified XML file formats for easy readability

The format of .xml files have been updated to make them easier to read. File content that may have been presented in a very long line can now be broken up into smaller fragments on separate lines.

For an example, see Knowledge Base Article [1-43315524](#).

http://support.mscsoftware.com/kb/results_kb.cfm?S_ID=1-43315524

C++ Solver Improvements

Adams/Solver (C++) has seen many improvements for running vehicle models created in Adams/Car. This effort in making the Adams/Car Solver more robust is expected to, in turn, benefit classes of Adams/Chassis models. Please consider using the C++ Solver in this release and providing us with feedback on your experiences. Please log on to our web portal at <http://support.mscsoftware.com/servicerequest/> to submit your feedback

Adams/Controls

Support for MATLAB Release 14SP3 and 2006b

MATLAB

The supported versions of MATLAB are R14SP3 (MATLAB 7.1, Simulink 6.3) and 2006b. Please note that IBM AIX platforms are not supported by The MathWorks in MATLAB R14SP3 and 2006b. For more information on R14SP3 platforms and compatibility, see <http://www.mathworks.com/support/sysreq/release14sp3/unix.html>

Tip: If you want to co-simulate with MATLAB and you are running Adams/Controls on one of the platforms that is not supported by MATLAB, use TCP/IP communication. This allows Adams/Controls to communicate with MATLAB even though the codes are running on different platforms. Please refer to Adams/Controls help to learn more about TCP/IP communication using the Adams Daemon Process (adams_daemon.py).

Adams/Driveline

Maintenance

This release of Adams/Driveline is primarily a maintenance release where focus has been on improving the quality and robustness of the solution aspects of full-vehicle Adams/Car simulations. Adams/Solver (C++) has seen many improvements for running vehicle models and these are expected to, in turn, benefit many classes of driveline models.

Adams/Durability

Maintenance

This release of Adams/Durability is primarily a maintenance release where focus has been centered on improving the quality and robustness of the solution aspects of durability simulations. Adams/Solver (C++) has seen many improvements for running vehicle models, especially Adams/Car models, and these enhancements are expected to, in turn, benefit other classes of durability models.

Adams/Flex

Maintenance

This release of Adams/Flex is primarily a maintenance release where focus has been on improving the quality and robustness of the solution aspects of flexible body simulations. Adams/Solver (C++) has seen many improvements for running Adams/Car models and these are expected to, in turn, benefit many classes of flex-body models.

Adams/SmartDriver

Maintenance

This release of Adams/SmartDriver is primarily a maintenance release where focus has been on improving the quality and robustness of the solution aspects of full-vehicle Adams/Car simulations. Adams/Solver (C++) has seen many improvements for running vehicle models and these are expected to, in turn, benefit models that use Adams/SmartDriver.

Event Builder Usability (1-FDB53677)

The event builder layout in Adams/Car has been reorganized with the intent to reduce the dimension of the widget (too big for 1024x768 resolution on Windows) and to better organize the various widgets. In particular:

- Moved Machine, Human and SmartDriver widgets into the Demand tabbed containers.
- Reorganized the complete layout of the mini-maneuver
- Made non-editable fields/widgets grayed out
- Enhanced the SmartDriver Data widget to include missing parameters that were originally editable only by opening the file in a text editor.

Documentation

Example for calculating Driving Machine braking parameters

To obtain good closed loop braking control of your vehicle model you must compute parameters needed by the Driving Machine. This article explains how to calculate the maximum brake torques for your vehicle, and how to ensure that for a braking demand of 100 your brake subsystem produces the maximum brake torque.

Obtaining good closed-loop braking control using the Driving Machine Solution#: [1-24626031](#).

http://support.mscsoftware.com/kb/results_kb.cfm?S_ID=1-24626031

Adams/Solver (C++ and FORTRAN)

Analytical Representation for Spheres in 3D Contact

Perfect spheres (i.e. Ellipsoids with equal radii) will no longer be faceted when using the RAPID contact engine. This enhancement will help to speed up the contact detection for some classes of models. If you have a sphere-to-solid contact, the sphere will be treated analytically (not faceted) and the solid will be faceted. This often improves the solver performance for models that contain a large number of spheres in persistent contact with complex solid geometry shapes, such as one might find in a recirculating ball mechanism, for example.

For an example, see Knowledge Base Article [1-42940901](#).

http://support.mscsoftware.com/kb/results_kb.cfm?S_ID=1-42940901

Run-Time Aggregate Mass Computation

Access to aggregate mass computation during run-time is now possible when using the `ADD_MASS_PROPERTY` and `BODY_MASS_PROPERTY` utility user-subroutines.

- **BODY_MASS_PROPERTY**: accepts specifiers for either a single part or the entire Adams model and returns to the caller the mass properties (mass, center-of-mass, and inertia tensor) for that part or model.

- **ADD_MASS_PROPERTY**: accepts the mass properties for two parts or sets of parts and returns the mass properties of the aggregate set.

These utility subroutines are expected to be used only for monitoring and control purposes and may only be called from REQSUB, SENSUB, SEVSUB, and CONSUB.

Only Adams/Solver (C++) supports inclusion of FLEX_BODY in the aggregate mass computation; the PART and POINT_MASS are supported in both solvers.

For an example, see Knowledge Base Article [1-42498511](#).

http://support.mscsoftware.com/kb/results_kb.cfm?S_ID=1-42498511

New Utility Subroutines

Additional utility subroutines have been added and documented, including a collection developed especially for users of the GSE (General State Equation) subroutine:

- **GET_GRAVITY**: returns the current Adams/Solver gravity vector, as specified by the ACCGRAV statement or command.
- **GSE_SET_IMPLICIT**: used to specify the implicit/explicit character of the equations governing the GSE. The formulation of a GSE can be changed without changing the corresponding Adams model dataset (.adm).
- **GSE_SET_ND**: used to specify the number of discrete states in the GSE. The number of discrete states in a GSE can be changed without changing the corresponding Adams model dataset (.adm).
- **GSE_SET_NS**: used to specify the number of continuous states in the GSE. The number of continuous states in a GSE can be changed, overriding any value of NS specified in the GSE statement.
- **GSE_SET_SAMPLE_OFFSET**: used to specify the simulation time at which the sampling of the discrete states is to start. Gives the GSE the ability to set the SAMPLE_OFFSET attribute itself.
- **GSE_SET_STATIC_HOLD**: used to enforce the condition that continuous states are or are not allowed to change during a static or quasi-static simulation. The value returned by GSE_SET_STATIC_HOLD will override any value of STATIC_HOLD specified in the GSE statement.

File Collection Utility for Remote Job Submission (Experimental Feature)

For your convenience an experimental Python utility (RunAdamsSolver.py) has been provided in the `install_dir/solver` directory which can be used to collect together all of the files needed to run the Adams simulation on a remote machine.

This is also useful when your Adams dataset (.adm) contains references to several other files that may reside in a variety of subdirectories and you simply want to package it all up for delivery to another user.

To run the utility on Windows:

```
adams07r1 python topdir/solver/RunAdamsSolver.py
```

Tip: 'topdir' is the installation directory of Adams and can be determined by issuing "adams07r1 -top".

Example:

```
adams07r1 python C:\MSC~1.SOF\MSC~1.ADA\2007R1~1\solver/RunAdamsSolver.py
```

We do welcome your feedback on the utility and would like to hear from you. Please log on to our web portal at <http://support.mscsoftware.com/servicerequest/> to submit your suggestions for improvement. When adding a new request, please be sure to choose the request type of Enhancement.

For an example, see Knowledge Base Article [1-43084311](#).

http://support.mscsoftware.com/kb/results_kb.cfm?S_ID=1-43084311

Note: This utility is intended to replace previous prototypes that were made available through the knowledge base article [1-22403221](#).
http://support.mscsoftware.com/kb/results_kb.cfm?S_ID=1-22403221

Adams/Tire

Tire Test Rig

With the new tire test rig available in Adams/Car you are able to better visualize the effects of tire properties and to compare tire model performance. Given a tire property file and a schedule of inputs you can easily produce plots of tire characteristics. You can access this feature in Adams/Car from the menu: **Simulate -> Component Analysis -> Tire Testrig**.

By means of this highly automated interface you create an event with an arbitrary number of analyses and tire property files; selecting the run-it button runs all analyses and automatically generates 27 plots. Just save the tire testrig events as .xml files and you can rerun the event over and over again on different tire models and datasets.

This feature helps you in analyzing the quality of tire models and tire datasets, giving you insight into:

- Force & Moment characteristics: constant load and camber, slip sweeps
- Cleat testing: constant axle height
- Moving road: vertical (poster), lateral, longitudinal, cambered
- Locked wheel controller
- Spin motion

For an example, see Knowledge Base Article [1-43315511](#).

http://support.mscsoftware.com/kb/results_kb.cfm?S_ID=1-43315511

Transient Modeling for all Tire Models (1-FDB52994)

Transient modeling similar to PAC2002/PAC-TIME has been added to Fiala, 5.2.1, PAC89 and PAC94 tire models. When rolling the tire behaves like a damper, with its force response depending on slip speeds; when standing still the tire should respond like a spring (force response should depend on tire deflection). A method to achieve this is by introducing the relaxation method (transient) as has been done for PAC2002, PAC_MC, and UA-Tire tire models. Because of this transient the tire will act as a spring when standing still. Ftire and SWIFT have similar behavior when standing still. This enhances spring behavior of the tire at zero speed and also ensuring that vehicle models on the four-poster with these tire models will also work well.

C++ Solver Support for Tires

Any modeling methods or entities supported by the Fortran Solver and used by Adams/Tire that were not supported in past releases of C++ Solver have now been added to the C++ Solver. We expect that you will see improved solver robustness for many models as well as new opportunities for performance improvement with the availability of features unique to the C++ Solver, including the HHT integrator, adaptive Jacobian pattern, and more.

Friction Ellipse Method for Pacejka Tire

The friction ellipse method for combined slip has been implemented for the Pacejka tire models: PAC2002, PAC-TIME, PAC-MC. This is an alternative to the cosine 'weighing' method which had already been in use. The method employed here is not part of one of the Magic Formula publications by Pacejka, but is an in-house development of MSC.Software. One of the benefits of using the friction ellipse method is that it reduces the number of required input parameters, thereby reducing the amount of tire testing needed. If the user supplies the coefficients for the combined slip cosine 'weighing' functions in the tire property file, the combined slip is calculated according to combined slip with cosine 'weighing' functions (standard method). If no coefficients are supplied, the model will switch to the so-called friction ellipse which is used to estimate the combined slip forces and moments and this switch will be reported on the screen and in the .msg file during run time.

For an example, see Knowledge Base Article [1-43315506](#).

http://support.mscsoftware.com/kb/results_kb.cfm?S_ID=1-43315506

Adams/Vibration

Nastran Modal Export for Frequency Domain Stress Recovery

Forced vibration analysis results from Adams/Vibration can now be used to recover stress (or strain) on a flexible body in the frequency domain using MSC Nastran. Modal deformations of a flexible body are now easily exported in Nastran format. When the Adams/Vibration plugin is loaded, this feature can be accessed from the **Vibration** menu under **Review** -> **Nastran Modal Export**. After you have performed a forced vibration analysis of a flexible body model you simply use that information, provide an output file name as well as the start and end frequencies you want to output to Nastran, and a binary modal deformation file (.mdf) will be written.

Sample Command Language:

```
!---export modal deformations to Nastran
mdi vibration export_q &
  vibr_analysis = .model_1.TIP_Forced_Vibration &
  flex_body = .model_1.FLEX_BODY_3 &
  file_name = "test.mdf" &
  start_freq = 300 &
  end_freq = 2000
```

Nastran Stress Recovery is the process of exporting the modal deformations (coordinates) of a flexible body from an Adams/Vibration analysis to Nastran. Rigid body motion of the flexible body is also included in the Modal Deformation File (MDF). A Nastran restart analysis can then be performed to recover dynamic stresses (or strains) on the finite-element model of the flexible body.

For an example, see Knowledge Base Article [1-43125354](#).

http://support.mscsoftware.com/kb/results_kb.cfm?S_ID=1-43125354

Stress FRF

Stress (and Strain) Frequency Response Function (FRF) at grid locations on a flexible body can now be plotted in Adams/PostProcessor. A new **Nodal Info** menu button is available under the **Vibration** -> **Build** menu when the Adams/Vibration plug-in is loaded. Note that the Modal Neutral File (MNF) for the flex body is required to contain stress and/or strain modes.

You can create Nodal Info object(s) by entering the flexible body, a list of node ids, and the criterion of interest (Von Mises, Maximum Shear, Normal X, etc.). From the Plotting dashboard for Vibration Analysis you can then select Source to be Stress FRF (or Strain FRF) to plot the Nodal Info objects you've created.

Note: Stress and strain contour plots of flexible bodies are not supported in vibration animation. Please see Known Issue article [1-24544891](#) in the knowledge base for further details.

Sample Command Language:

```
!---create nodal info
vibration stress_strain_nodal_info create &
  stress_strain_nodal_info name=.model_1.Nodal_Info_1 &
  flex_body=.model_1.Flexible_Body_2 &
  nodes = 31, 32, 33, 1424 &
  criterion=vonmises
```

Nodal Info objects are retained as part of the vibration model when you save it, allowing you to reuse or modify them later on. A nice feature of the "Nodal Info" object is that it does not have to be created prior to running a vibration analysis -- you can create it afterward and the Stress/Strain FRFs can still be plotted.

For an example, see Knowledge Base Article [1-43084321](#).

http://support.mscsoftware.com/kb/results_kb.cfm?S_ID=1-43084321

Adams/View

Command Language Reference Guide

Newly available in this release is a more complete set of documentation for the Adams/View Command Language. Many commands that were never documented before are now covered and are presented in an easy-to-read format that includes Format, Example, and Description sections as well as Extended Definition, Caution and Tips sections, where applicable. Look for “View Command Language” under “Adams/View” help beneath “Adams Basic Package”

Overall Documentation Enhancements

For Adams, we've improved the help system to help you more easily find information.

- **Combined tables of contents (TOCs)** - We've organized the TOCs to reflect the new Adams packaging so you can easily access the product help.
- **Improved TOC and search pane** - You can now expand and close the pane on the left side of the help window that contains the TOC and search results. The TOC also contains automatic sync to show you where your current topic is in the TOC.
- **Integrated master site** - You can now access all product documentation from one master site and search globally across all products. The master site can be accessed from the Help menu (Adams Help). Product specific help is also available, including indexes where applicable.
- **Printable versions of material** - You can view the online documentation in PDF format (for printing purposes). Select the PDF button on the upper right hand side of the help system to open the PDF version of the help topic.
- **New Favorites tab** - You can easily bookmark a page in the help system using the Add button under Favorites tab
- **All Products help button** - You can easily access the help system for all the products using the All Products help button from anywhere in the help system

2

Running Adams Products

- Starting Adams Products
- Setting Preferences
- Setting Your Working Directory

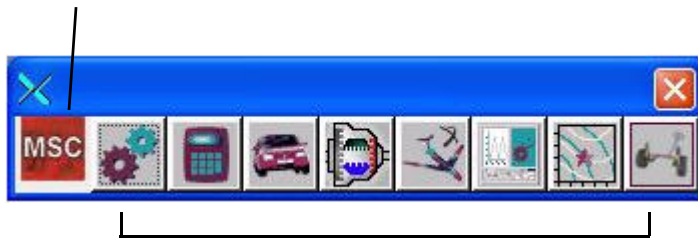
Starting Adams Products

This sections described how you can start your Adams products on UNIX and on Windows.

Starting Adams Products on UNIX

The Adams Toolbar is a starting point to using Adams products on UNIX. The toolbar is shown below.

Adams Toolbar tool - Right click to set up Toolbar, manage memory models, access online help and Technical Support resources and more



Product tools - Click to run product or right-click to configure products and create user libraries.

Hold the cursor over a tool to see the name of the associated product.

You can also use the Adams Toolbar to:

- Customize, keep track of, and organize multiple libraries of standard Adams products
- Create binaries
- Manage custom memory models and product preferences

For more information on these or other Adams Toolbar operations, see the Running and Configuring online help (from the **Help** menu in any product, select **Adams Help**, on the left pane, select **Configuring Adams**).

To start a product on UNIX:

1. To display the Adams Toolbar, at the command prompt, enter the command **adams07x** where **x** is the version number, for example **adams07r1**.
2. Click on the tool representing the product you want to start.

Note: We recommend that you use the Adams Toolbar to start your Adams products, but if you want to automate certain operations, use the text-based Program Menu. For more information, see the Running and Configuring online help.

Starting Adams Products on Windows

You start any Adams product from the Start menu. You can also use the Start menu to:

- Change your license type
- Generate problem reports
- Uninstall products, demonstrations, and documentation
- Set Adams preferences

For more information on these or other operations, see the Running and Configuring online help.

To start a product on Windows:

- From the **Start** menu, point to **Programs**, point to **MSC.Software**, point to **MSC Adams 2007 r1**, point to the name of the product you want to start, and then select the product type. For example, point to **ACar**, and then select **Adams - Car**.

Tip: Select the corresponding desktop icon for the product, if you installed it on your desktop.

Setting Preferences

This section describes how you can set preferences, such as your working directory, graphics setting, and memory model size.

Setting Preferences on UNIX

You use the Registry Editor from the Adams Toolbar to set a variety of preferences. For information on the preferences you can set, see the Running and Configuring online help.

To display the Registry Editor:

- From the **Adams Toolbar**, right-click any product tool, and then select **Change <Product Name> Settings**.

Setting Preferences on Windows

You use the Settings menu to modify:

- Graphics settings
- HOOPS settings
- Memory model size

To display the Settings dialog box:

- From the **Start** menu, point to **Programs**, point to **MSC.Software**, point to **MSC Adams 2007 r1**, and then select **Adams - Settings**.

Setting Your Working Directory

During a session in a default or custom product, you can select the directory where you want to place your model and output files.

For Adams/Adams/View, you can set the working directory from the Welcome dialog box.

To set your working directory:

1. From the **File** menu, select **Select Directory**.
2. In the dialog box that appears, select the working directory.

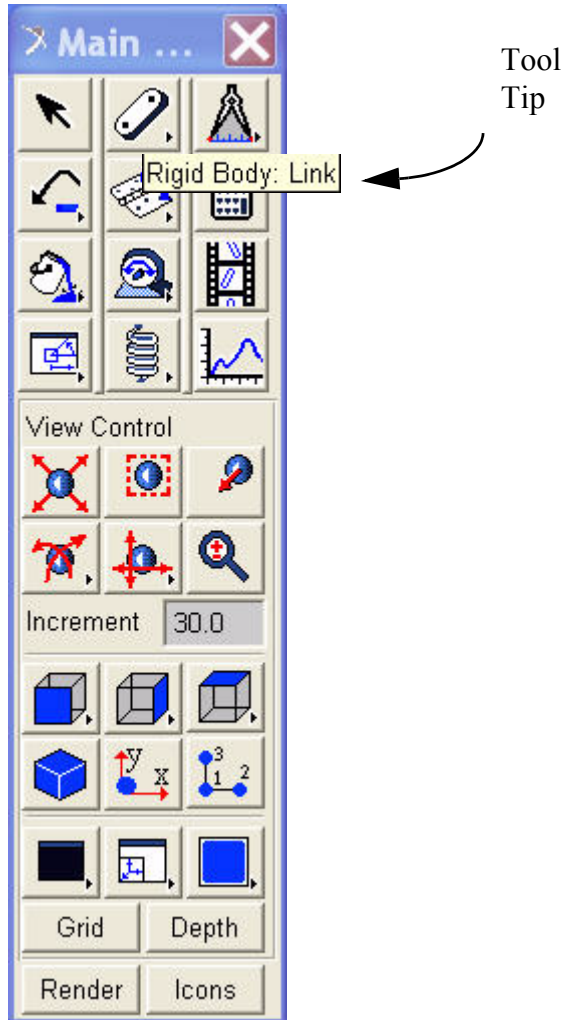
3

Getting Help

- [Tool Tips](#)
- [Online Help](#)
- [Tutorials and Examples](#)

Tool Tips

Tool tips display information about the item the cursor is currently over in an Adams product. The following shows the tool tip that appears when you place the cursor over the link geometry tool.



To display tool tips:

- Move the cursor over the item in the interface on which you'd like information. A brief description of the item appears.

Online Help

To help you use the Adams products, MSC.Software provides online help (HTML format). To view the online help and tutorials, you can use your default Web browser. An example of online help is shown below

Automatic sync to show the current topic in TOC

Navigate to next topic or previous topic

All Products Help Button

Bookmark topics of interest

Search for documentation across entire Help system

Products grouped by package

Adams 2007 r1 - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites

Address C:\MSC.Software\MSC.ADAMS\2007r1\help\wwwhelp\wwhimp

Contents Index Search Favorites

- About Adams
- Configuring Adams
- Release Notes
- Getting Started
- Adams Basic Package
 - Adams/View
 - Adams/Solver
 - Adams/PostProcessor
 - Adams/Insight
- Adams Advanced Package
 - Adams/Controls
 - Adams/Durability
 - Adams/Flex
 - Adams/Vibration
- Adams Car Package
 - Adams/Car
 - Adams/Chassis
 - Adams/Driveline
 - Adams/SmartDriver
 - Adams/Tire

Adams 2007 r1

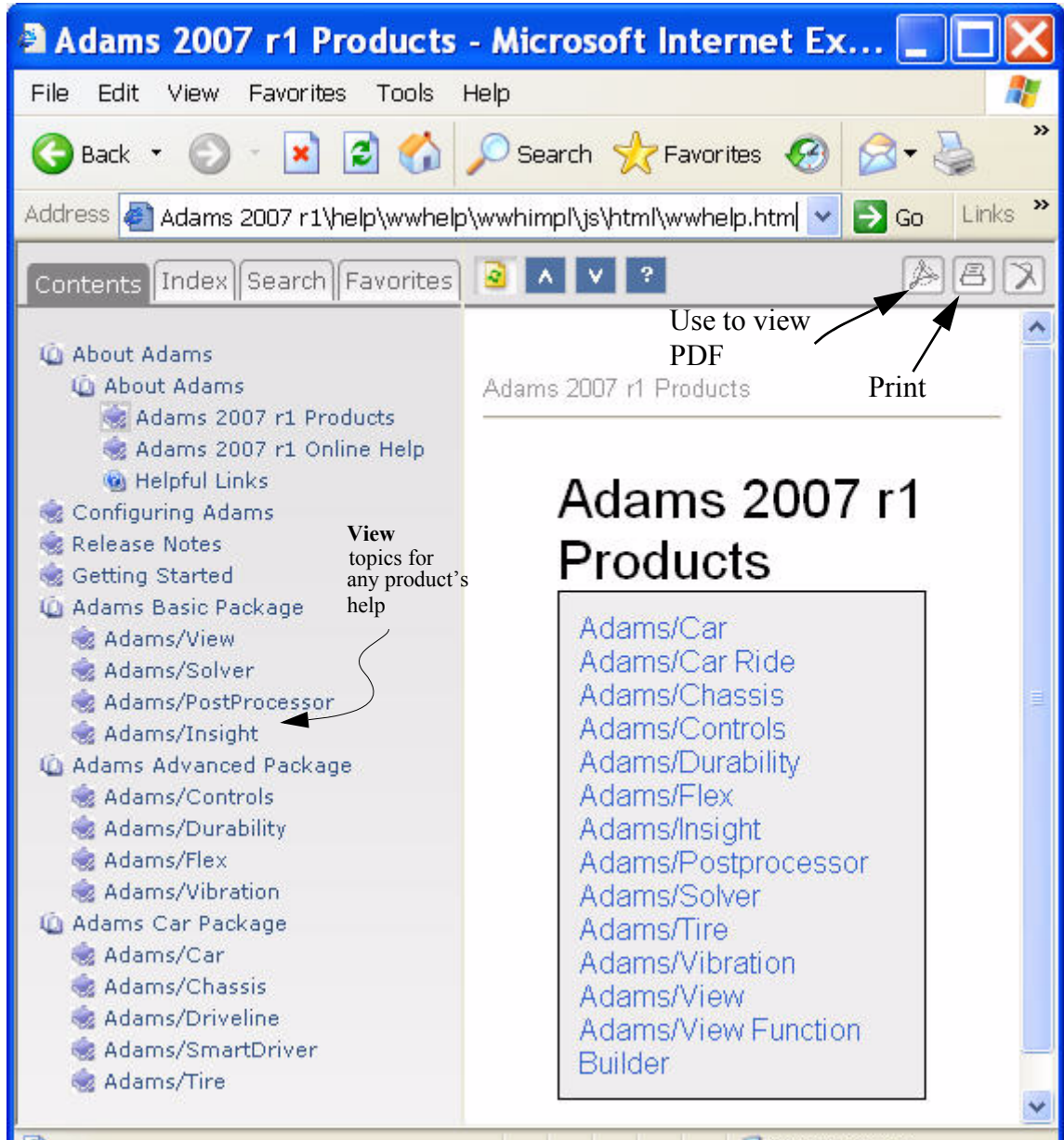
Versions of Web Browsers

For the Adams Help system, all you need is a Windows, Macintosh, or UNIX computer running a fairly new browser with JavaScript enabled. If JavaScript is not enabled, then the Help set will not display in its entirety. You also need to have appropriate Acrobat reader to view PDF files from online help system. We recommend that you view the online help using one of the following browsers:

- Internet Explorer 5.x or 6.x
- Netscape Navigator 7.x or 8.x
- Mozilla/Firefox 1.x

Accessing the Online Help

You can view help for a dialog box, a product, or for all Adams products. The figure below shows the help for all Adams products, called the integrated master site. You can use this site to view any product's help and search across all product help. You can also access frequently asked questions, release notes for all products, and view the documents in Adobe Reader.



To get help on a dialog box:

1. Click in the dialog box for which you need help.
2. Press **F1**.


Adams launches a browser window that contains information about the dialog box.

To get general help on your product:

- From your product's **Help** menu, select *Product Name Help* (where *Product Name* is the name of your Adams product).

Adams launches a browser window that contains the starting point for your product's online help.

To get help on another Adams product:

- Perform one of the following:
 - If you're in an Adams product, from its Help menu, select Adams Help.
 - If you're in the help for an Adams product, use the "All Products Help" button () to get to main help system.

Your default browser starts and displays the master site for Adams online help.

To open the Adams online help from the Adams Toolbar:

- Right-click the Adams Toolbar tool, and then select **Online Help**.

Your default browser starts and displays the master site for Adams online help.




To open the Adams online help from the Start Menu:

- From the **Start** menu, point to **Programs**, point to **MSC.Software**, point to **MSC Adams 2007 xx** (where **xx** is the release number), and then select **Adams - Online Help**.

Your default browser starts and displays the master site for Adams online help.

Navigating through the Help



You navigate through the Adams help system as you do through any help system, selecting topics in the pane on the left. In addition, we've provided:

- Navigation arrows   at the top of the pane to let you scroll through topics one at a time.
- Automatic sync  to show you where your current topic is in the table of contents (TOC). This is very helpful if you, for example, search for a topic and want to know if there are more topics on the subject. It shows you where the topic is in the TOC, allowing you to see whether or not there are more topics with it.

Searching

You can search all the help files in HTML format for a particular product or all Adams products.

If you are in a product specific help

1. Open the online help for your product.
2. Press Search button  at the top of the help window, enter the search text, and then press the Go button .

The results appear in the pane on the left, replacing the table of contents.



3. Click the topic you want to view.

If you are in Adams help system

1. Press search button at the top of help window, which will give an option to search All Available products or A single product.
2. Enter the search text and follow Steps 2 and 3 above

Printing

To print a file:

- In the help system you can select the Print button  to print the topic that you are viewing
- You can select the PDF button  to see the entire PDF file pertaining to the topic and print the file like a regular PDF file. Notice that some of the images in PDF file may be cropped.

Index

The Index tab displays an alphabetical list of keywords associated with help topics. To view index entries, you can select a letter group to display the entries for that group. When you click on an index entry, the related topic will display in the topic frame. You can select Indexes in a product specific help or in the main help system.

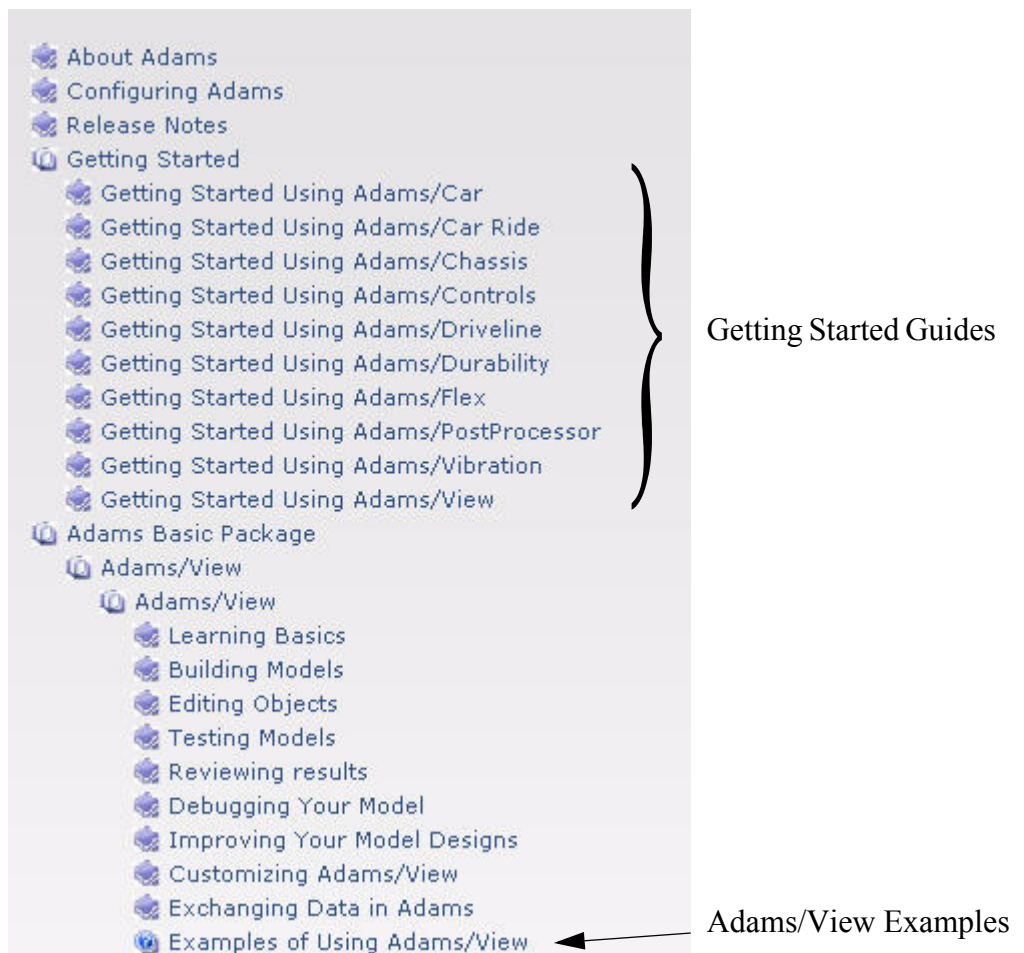
Tutorials and Examples

Adams products have a set of tutorials or getting started guides that step you through examples of using the product's features, as well as introduce the basic concepts of the product. The getting started guides are online. In addition, many of the products have examples of its features that are stored in Knowledge Base Articles.

You will find links to all the tutorials and examples for a product under its Examples tab.

To access the tutorials and examples:

- From the online help for a product, from the pane on the left, select **Examples**.
- From the online help, from the left pane, select **Getting Started** and select the product that you are interested in.



4

Supported Versions of Integration Products

- Support for Easy5 and MATLAB
- Supported Versions of Integration Products

Support for Easy5 and MATLAB

Easy5

This release of Adams/Controls is certified to run with Easy5 2005 r1 SP2. Note Easy5 2005 r1 does not support SGI-IRIX.

Platform support is subject to change. For the latest information, see the Easy5 2005 r1 Hardware and Software Requirements at:

http://www.mscsoftware.com/products/easy5_support.cfm

Note: If you want to co-simulate with Easy5 and you are running Adams/Controls on one of the platforms that Easy5 does not support, you should consider using TCP/IP communication. This allows Adams/Controls to communicate with Easy5 even though the codes are running on different platforms.

MATLAB

The supported versions of MATLAB are R14SP3 (MATLAB 7.1, Simulink 6.3) and 2006b. Note that MATLAB R14SP3 and 2006b do not support IBM platforms. For more information on R14 platforms and compatibility, see:

<http://www.mathworks.com/support/sysreq/release14sp3/unix.html>

Note: If you want to co-simulate with MATLAB and you are running Adams/Controls on one of the platforms that is not supported by MATLAB, you should consider using TCP/IP communication. This allows Adams/Controls to communicate with MATLAB even though the codes are running on different platforms.

For further information regarding UNIX platform support for Adams/Controls, see Knowledge Base Article 12445: <http://support.adams.com/kb/faq.asp?ID=kb12445.dasp>

Supported Versions of Integration Products

| Company | Product Name | Product Version | Adams Package (Product) | Platform |
|--|---|--|--|--|
| The Mathworks, Inc. | Release 14 SP3 MATLAB Simulink Real-Time Workshop | Version 7.1 Version 6.3 Version 6.3 | Adams Advanced Package (Adams/Controls) 1 | HP HP-UX 11i Red Hat Enterprise Linux 4 Sun Solaris 8, 9, 10 Windows 2000 Windows XP Professional Windows XP Professional X64 |
| | Release 2006b MATLAB Simulink Real-Time Workshop | Version 7.3 Version 6.5 Version 6.5 | | |
| MSC.Software Corporation | Easy5 | 2005 r1 SP2 (8.0.4) and 2005 r1 SP3 (8.0.6) | Adams Advanced Package (Adams/Controls) 1 | HP HP-UX 11i IBM AIX 5.3 Red Hat Enterprise Linux 4 Sun Solaris 8, 9, 10 Windows 2000 Windows XP Professional |
| ANSYS, Inc. | ANSYS | V6.0 and above | Adams Advanced Package (Adams/Durability) | UNIX and Windows |
| | | V5.4 and above | Adams Advanced Package (Adams/Flex) | |
| Hibbitt, Karlsson & Sorensen, Inc. (HKS) | ABAQUS/ADAMS | Version 6.3 and above Version 6.1-1 and above | Adams Advanced Package (Adams/Durability) Adams Advanced Package (Adams/Flex) | UNIX and Windows |
| MSC.Software Corporation | Fatigue | 2001 and above | Adams Advanced Package (Adams/Durability) | UNIX and Windows |

| Company | Product Name | Product Version | Adams Package (Product) | Platform |
|--------------------------|-------------------------|------------------------------|--|------------------|
| MSC.Software Corporation | Marc | 2005 and above | Adams Advanced Package (Adams/Durability) | UNIX and Windows |
| | | 2003 and above | Adams Advanced Package (Adams/Flex) | |
| MSC.Software Corporation | MSC.Nastran | V69.X and above | Adams Advanced Package (Adams/Durability) Adams Advanced Package (Adams/Flex) | UNIX and Windows |
| nCode | FE-Fatigue | Version 5.2 and above | Adams Advanced Package (Adams/Durability) | UNIX and Windows |
| UGS PLM Solutions | I-DEAS Mechanism Design | I-DEAS NX 10 and above | Adams Advanced Package (Adams/Durability) | UNIX and Windows |
| | | I-DEAS 8, 9, NX 10 and above | Adams Advanced Package (Adams/Flex) | |

Notes: 1 Adams/Controls, in the Adams Advanced Package, is supported on all the platforms listed in the [Adams 2007 r1 Hardware and Software Specification](#). However, partner product support varies. Please see the Knowledge Base Article [1-53024309](#) for details regarding the availability of controls software on platforms.

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