

R16.1.1 Release Notes

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1 Release notes revision

This file constitutes revision 0 of the release notes for Ansys LS-DYNA® version R16.1.1.

2 License

The string “REVISION 16” must appear in the license file to run version R16.1.1. Please contact your distributor or your Ansys sales representative if you need to have your license updated.

3 Documentation

The R16.0 User's Manuals provide documentation for R16.1.1. To download these manuals, go to <https://lsdyna.ansys.com/manuals-download/>. For features mentioned in these notes missing from the R16.0 User's Manuals, please refer to the DRAFT User's Manuals at <https://lsdyna.ansys.com/manuals-download/>. Please note that not all features in the DRAFT User's Manuals are available in version R16.1.1.

4 Notes

The remainder of this file briefly describes new features, enhancements, and bug fixes in version R16.1.1. Other recent releases may also include some of these updates.

We arranged the items by category. Understand that, in many cases, a particular item may pertain to more than one category. In the interest of brevity, we list each item only once, under a single category.

5 New

5.1 MPP

1. Added keyword ***CONTROL_MPP_DECOMPOSITION_TRANSFORM_KEYWORD**. Adding this keyword will cause all ***CONTROL_MPP_DECOMPOSITION_TRANSFORMATION** instantiations to apply not just to the primary decomposition region, but to all the specific decomposition regions created by other ***CONTROL_MPP_DECOMPOSITION_...** keywords. Note that this feature has been available since R12 through the `pfile` command `decomposition { transform_keyword }`.

6 Improvements and Enhancements

6.1 Airbags

1. When vents are defined in ***AIRBAG_CPG**, skip applying coupling forces to vent elements. If PPOP is used, coupling forces are applied to vent elements until the vent is marked as open.
2. Made a change to the evaluation of porosity curves defined in ***MAT_FABRIC** when associated with ***AIRBAG_CPG**. Previously, porous velocity was reset to zero if the pressure was out of bounds of the provided porosity curve. We now use the last available slope to extrapolate the porous velocity, similar to the behavior of ***AIRBAG_PARTICLE**. Ideally, the porosity curve should include the entire range of pressures expected in the simulation.

6.2 Contact

1. Made improvements to MPP single surface (***CONTACT_AUTOMATIC_SINGLE_SURFACE**) contact and penetration tracking that reduce force spikes in difficult meshes.

7 Bug Fixes

7.1 Airbags

1. Made various fixes for curves and node IDs used in ***AIRBAG_CPG** defined in files included through ***INCLUDE_TRANSFORM**.
2. Fixed incorrectly resetting the atmospheric temperature used in ***AIRBAG_CPG** to 293 K instead of using the temperature defined in the input file.

3. Clarify error messages related to mesh integrity checks in ***AIRBAG_CPG**.
4. Fixed compatibility issue when using ***PART_COMPOSITE** and ***AIRBAG_CPG** in the same input deck. Automatically generated part IDs could conflict in some scenarios.
5. Fixed thermodynamic correction getting inadvertently turned off when multiple gas species were defined for ***AIRBAG_CPG**.

7.2 Contact

1. Fixed an MPP issue related to the IPBACK option on Optional Card E of ***CONTACT_...** used for constraint-based tied contacts. In some cases, if two constraint-based tied interfaces had a very substantial overlap (amounting to 100% on some MPP domain), the backup contact could be ignored on that processor, resulting in a failure to tie.
2. Enabled orthotropic friction to be used with segment-to-segment (SOFT = 2) contact. It was accidentally disabled starting with R14.0.

7.3 Implicit (Mechanical) Solver

1. Fixed floating-point exception error that occurred in some configurations when using METHOD = 102 (LOBPCG) on ***CONTROL_IMPLICIT_EIGENVALUE**.
2. Corrected logic for using implicit intermittent eigenvalue computation with an explicit time simulation (***CONTROL_IMPLICIT_GENERAL** with IMFLAG = 6) to properly handle the eigenvalue computation at the end time. Explicit time stepping may not hit the end time exactly so the intermittent eigenvalue computation was being skipped and failure would occur.