

ANSYS® AQWA™ Version 5.7B

Release Notes

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1. CONTENTS

This intermediate release contains version 5.7B of AQWA and the AQWA-GS, together with supporting dlls and resource files.

2. INSTALLATION

Before installing this version you **MUST** already be running version 5.7A or later.

2.1 Installation directory

The installation program is called setup_aqwa_57b.exe. When you run this you will be prompted to input the directory where this program is to be installed. This must be the \aqwa directory where the previous version 5.7A was installed. For example, if you have version 5.7A in d:\temp\aqwa\v57a, you should specify d:\temp\aqwa. The new version will be installed in d:\temp\aqwa\v57b. Previous versions may be uninstalled after this version is installed.

2.2 Security

There is no new security setup file.

2.3 AQWA to Microsoft® Excel® interface

There are no changes to these files.

2.4 ANSYS to AQWA translator

The anstoaqwa macro is now installed automatically as part of the ANSYS v11.0 installation.

3. DEVELOPMENTS

The last version that was released as a full installation was version 5.7A. For completeness the major developments since then are summarised below. Details of all developments and bug fixes can be found in the PSR lists on our website; www.century-dynamics.com.

Ref	Description	Version
3.1	Spaces in path names	5.7B
3.2	File name convention	5.7B
3.3	Convergence in AQWA-LIBRIUM	5.7B
3.4	RDEP option in AQWA-LIBRIUM	5.7B

3.1 Spaces in path names

AQWA will now accept path names with spaces. Previously a space in the path led to the confusing error message "AQWA only accepts .DAT files".

3.2 File name convention

It is no longer necessary for AQWA data file names to begin with "aP", where P indicates the program (e.g. L for LINE, D for DRIFT etc.) For drag/drop this restriction was removed some time ago, but now it has also been removed when running from a command prompt or using an AQWA command file.

3.3 Convergence in AQWA-LIBRIUM

Improvements have been made to AQWA-LIBRIUM to help it to converge in simple situations where there is a singularity in the stiffness matrix; e.g. multiple structures connected by slack moorings. Note that this will not necessarily solve more complex singular systems, particularly those involving articulations.

3.4 RDEP option in AQWA-LIBRIUM

AQWA-LIBRIUM will now accept the RDEP option to read a starting position from an .EQP file in the same way as FER, DRIFT and NAUT. This has been found useful with cable dynamics, when a simple static run can be performed to provide a realistic starting position for a subsequent cable dynamics analysis.

4. BUG FIXES

Fixes to Grade 4 and 5 bugs are summarised below. These are bugs that produce incorrect answers: Grade 4 bugs give obviously incorrect results while Grade 5 bugs give errors that are not obvious to the user. Details of all the bug fixes can be found on our web-site.

Ref	Description	Fixed in version
4.1	Drag forces on DISC elements in AQWA-LIBRIUM	5.7B
4.2	Skin friction on TUBE elements	5.7B
4.3	AQWA-LIBRIUM graphs in error if GREV is used	5.7B
4.4	Hydrostatics for floodable TUBE elements	5.7B
4.5	Annotation of merged graphs	5.7B
4.6	Near-field calculations for non-diffracting structures	5.7B
4.7	Hull drag forces omitted	5.7B
4.8	Added mass and damping transposed in AGS	5.7B
4.9	Elements near the seabed with high frequency waves	5.7B
4.10	LSTF with mixed models	5.7B
4.11	Wave frequency accelerations in AQWA-NAUT	5.7B

4.1 Drag forces on DISC elements in AQWA-LIBRIUM

The drag forces on DISC elements were missing in AQWA-LIBRIUM.

4.2 Skin friction on TUBE elements

Skin friction on TUBEs only applied to the part of the TUBE where the full circumference was submerged. This had the effect of a sudden introduction of the skin friction force if the TUBE enters the water near flat. i.e. with its local z axis (upward normal to the cylindrical surface) parallel to the FRA Z axis. Skin friction for partially submerged tubes has been introduced.

4.3 AQWA-LIBRIUM graphs in error if GREV is used

Graphs plotted from AQWA-LIBIRUM results were in error when the GREV card was used in deck 18.

4.4 Hydrostatics for floodable TUBE elements

Hydrostatics for floodable, partially submerged, thick-walled TUBEs were incorrect when the inner diameter was totally above or below the water surface and the outer diameter was partially submerged.

4.5 Annotation of merged graphs

When graphs were merged together in the AGS the ordinate and abscissa titles could be incorrect depending on the other graphs which were displayed.

4.6 Near-field calculations for non-diffracting structures

A structure with no TPPL/QPPL elements could fail in AQWA-LINE if near-field drift calculations were requested. This could occur if hydrodynamic interaction was used or the user requested near field or full QTF calculation in the options list.

4.7 Hull drag forces omitted

If the translational hull drag forces were omitted or input as zero (CUFX and CUFY) then some or all of the remainder of the hull drag forces could be omitted if the number of directions specified was less than the maximum.

4.8 Added mass and damping transposed in AGS

For the plots of added mass and damping, the pitch-heave (e.g.) graph, which should display row 5 column 3 of the matrix, displayed row 3 column 5.

4.9 Elements near the seabed with high frequency waves

When elements were near the sea bed in deep water, underflow problems could occur at high frequencies, resulting in poor accuracy of wave kinematics.

4.10 LSTF with mixed models

When using the LSTF option with mixed models (QPPL/TPPL and Morison elements) results could be incorrect. The error was dependent on the order in which the elements were input.

4.11 Wave frequency accelerations in AQWA-NAUT

The wave frequency accelerations in AQWA-NAUT were not calculated and hence were always zero. This also meant that the slow accelerations were always the same as the total accelerations. These are now calculated and are consistent with the slow/wave frequency position and velocity.