

# **Agilent 7000 Series Triple Quadrupole GC/MS System**

## **Quick Start**



**Agilent Technologies**

# Notices

© Agilent Technologies, Inc. 2013

No part of this manual may be reproduced in any form or by any means (including electronic storage and retrieval or translation into a foreign language) without prior agreement and written consent from Agilent Technologies, Inc. as governed by United States and international copyright laws.

## Manual Part Number

G7000-90045

## Edition

First Edition, September 2013

Printed in USA

Agilent Technologies, Inc.  
5301 Stevens Creek Boulevard  
Santa Clara, CA 95051

Microsoft<sup>®</sup> is a U.S. registered trademark of Microsoft Corporation.

## Warranty

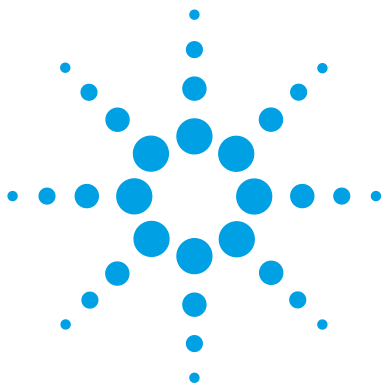
**The material contained in this document is provided “as is,” and is subject to being changed, without notice, in future editions. Further, to the maximum extent permitted by applicable law, Agilent disclaims all warranties, either express or implied, with regard to this manual and any information contained herein, including but not limited to the implied warranties of merchantability and fitness for a particular purpose. Agilent shall not be liable for errors or for incidental or consequential damages in connection with the furnishing, use, or performance of this document or of any information contained herein. Should Agilent and the user have a separate written agreement with warranty terms covering the material in this document that conflict with these terms, the warranty terms in the separate agreement shall control.**

## Technology Licenses

The hardware and/or software described in this document are furnished under a license and may be used or copied only in accordance with the terms of such license.

## Restricted Rights Legend

U.S. Government Restricted Rights. Software and technical data rights granted to the federal government include only those rights customarily provided to end user customers. Agilent provides this customary commercial license in Software and technical data pursuant to FAR 12.211 (Technical Data) and 12.212 (Computer Software) and, for the Department of Defense, DFARS 252.227-7015 (Technical Data - Commercial Items) and DFARS 227.7202-3 (Rights in Commercial Computer Software or Computer Software Documentation).



## Quick Start

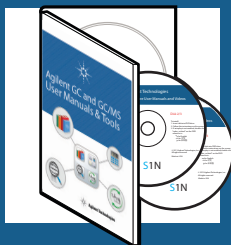
### Welcome to the Agilent 7000 Series Triple Quadrupole System

Your system includes the **Agilent 7000 Series Triple Quadrupole**, the **Agilent 7890 Series GC**, and **Agilent MassHunter Workstation Software**, a comprehensive portfolio of GC/MS software.

Also included with your system is a comprehensive collection of **manuals, videos, user applications, and method development tools**. These are located on the:

- **Agilent GC and GC/MS User Manuals and Tools DVD set**
- **Agilent GC/MS Software Information and Manuals memory stick**

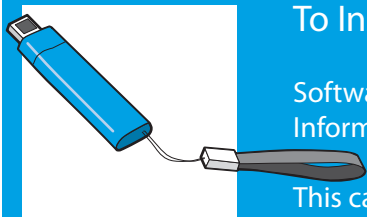
This book tells you how to install this information on your computer and provides a brief summary of some of the documents included with it.



#### To Install Your Hardware Library - See Page 6

Hardware tools and manuals are on the GC and GC/MS Manuals and Tools DVD set.

This can be installed by anyone who has authority to copy information onto the receiving computer.



#### To Install Your Software Library - See Page 7

Software manuals are on the GC/MS Software Information and Manuals memory stick.

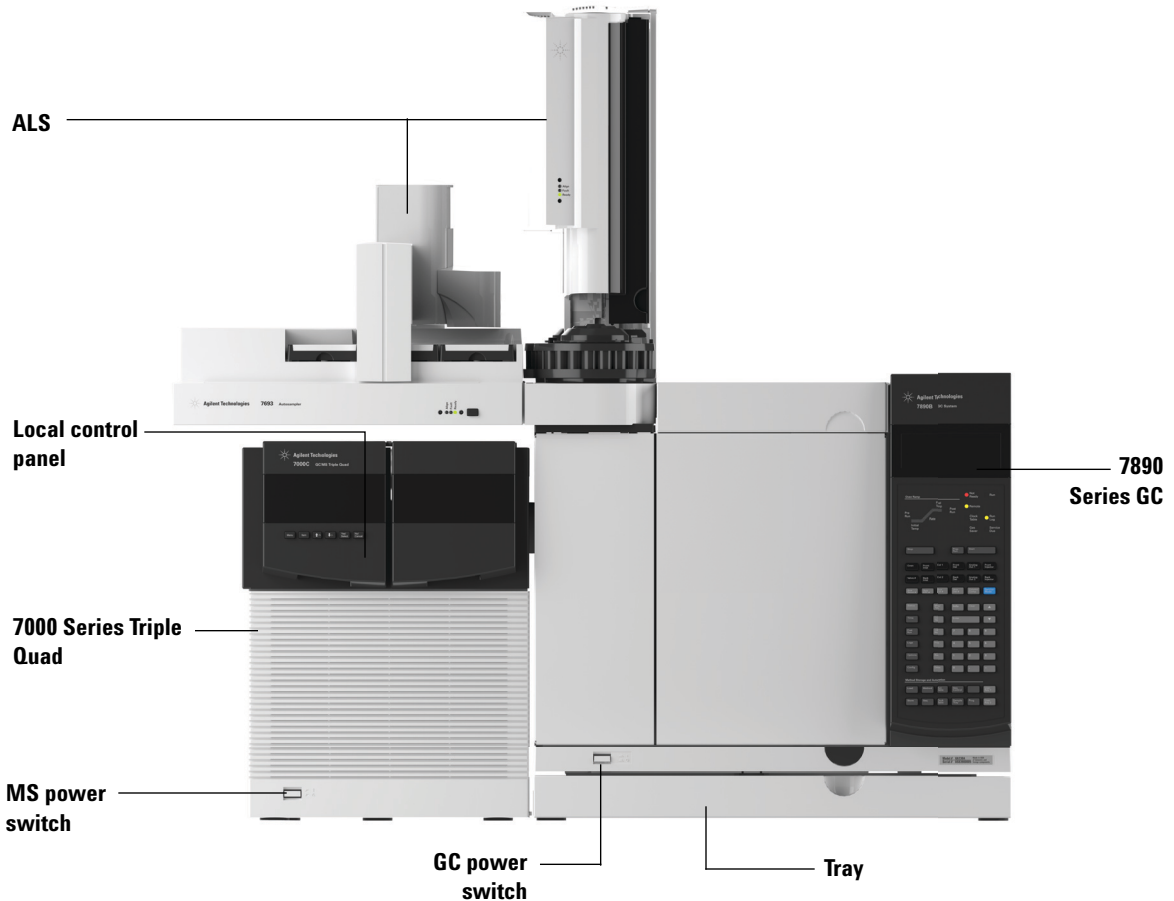
This can be installed by anyone who has authority to copy information onto the receiving computer.



# The Agilent 7000 Series Triple Quadrupole and 7890 Series GC

The **Agilent 7000 Series Triple Quadrupole** is a stand-alone triple quadrupole mass spectrometer for use with an **Agilent 7890 Series Gas Chromatograph**.

Be sure to see the full library of information available for your Agilent 7000 Series Triple Quadrupole and Agilent 7890 Series GC on the **Agilent GC and GC/MS Manuals and Tools DVD set**. See [“Your Hardware Library”](#) on page 6 for how to install and access this wealth of information.

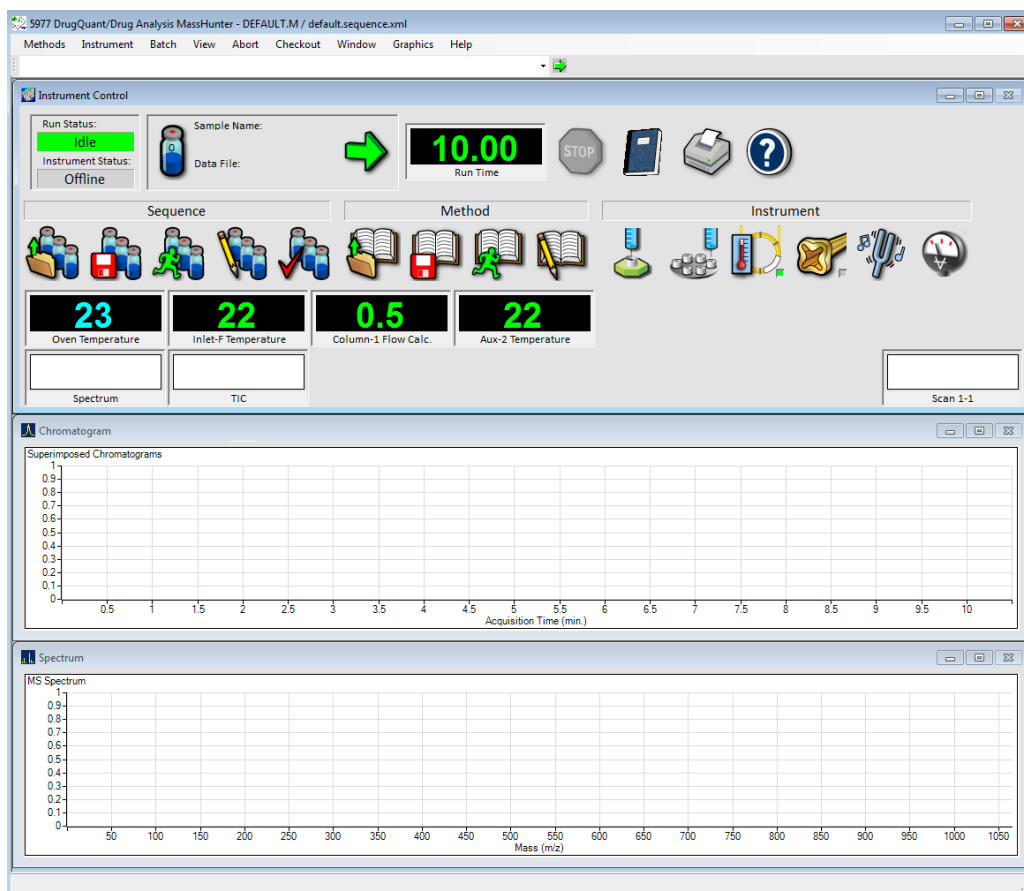
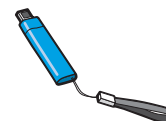


**Figure 1** Agilent 7000 Series Triple Quadrupole system, shown with the Agilent 7890B GC and ALS

# The Agilent MassHunter Workstation

The **MassHunter Workstation** provides dedicated software modules for quantitation, compound confirmation, target compound screening, degradant and unknown identification, characterization of biomolecules, and protein and metabolite identification.

Be sure to see the full library of information available for your **MassHunter Workstation** software on the **Agilent GC/MS Software Information and Manuals** memory stick. See “[Your Software Library](#)” on page 7 for how to install and access this vast library.

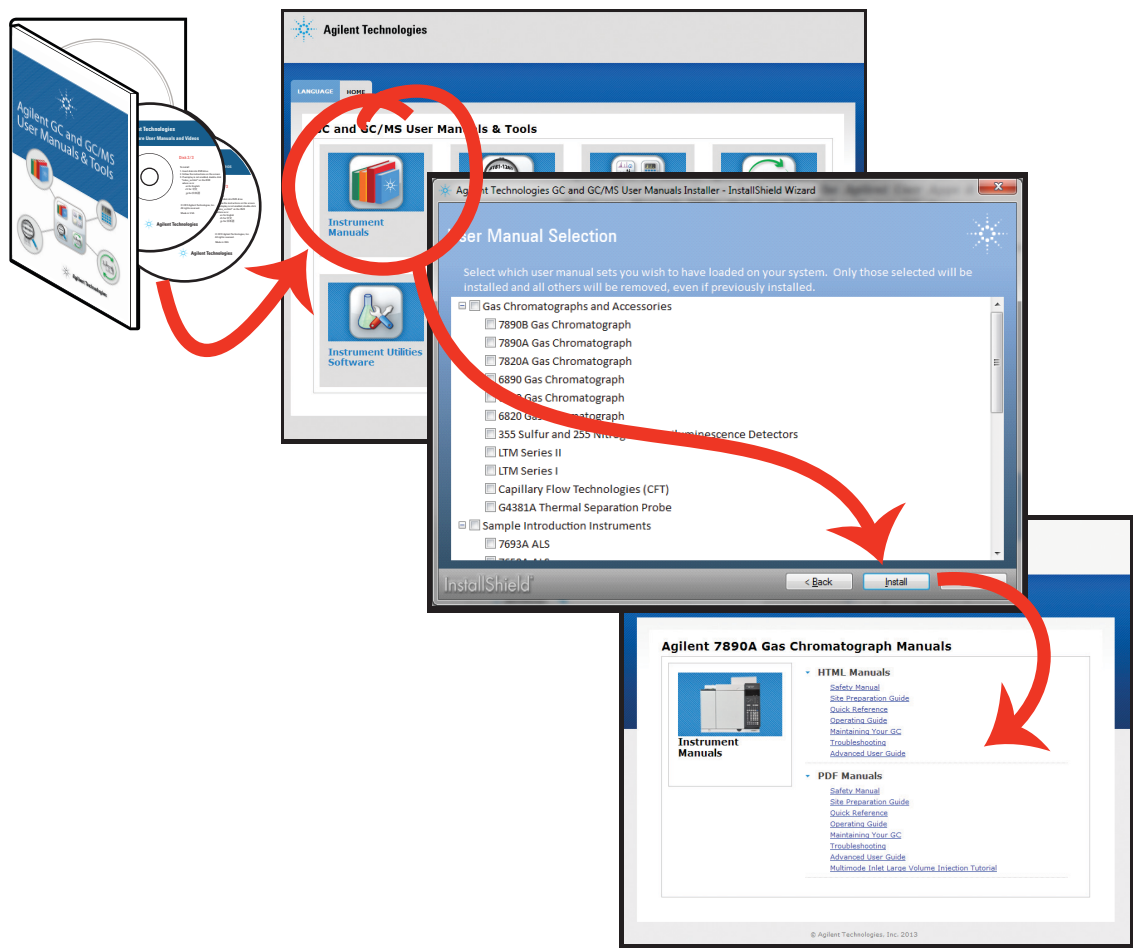


**Figure 2** Agilent MassHunter Workstation Software

# Your Hardware Library

Use the **Agilent GC and GC/MS Manuals and Tools** DVD set to install the full library of Learning Products (in HTML and PDF formats) with **manuals** and **videos** that explain how to install, operate, maintain, and troubleshoot your system plus valuable **user applications, method development tools**, and an electronic **Parts Finder** tool which allows you to locate parts quickly by clicking on nested photos rather than thumbing through a paper catalog.

Insert Disk 1 into your DVD drive, and follow the system prompts to install these tools on your computer. Once installed, icons will be placed on your desktop for quick access to your material.



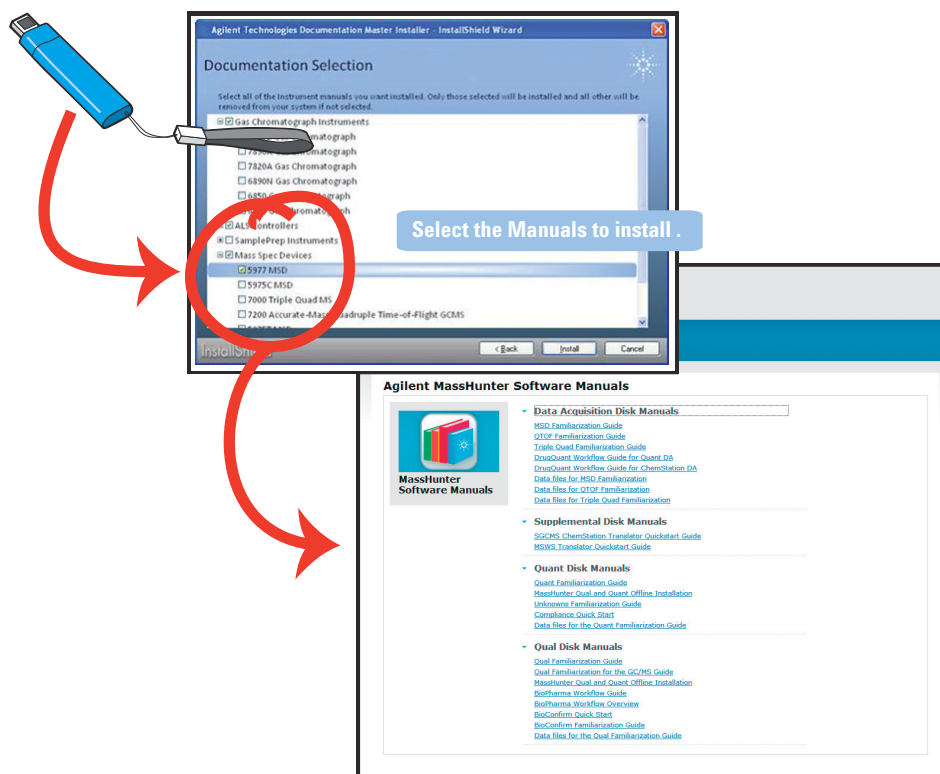
## Your Software Library

Use the **Agilent GC/MS Software Information and Manuals** memory stick to install the extensive library of software Manuals, Tutorials, online Help, Videos, and more for your system.

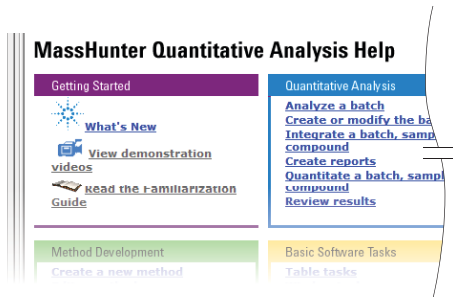
Here you will find Manuals, Help, Videos, Familiarization Guides, and more for:

- MassHunter 5975/5977 GC/MSD
- MassHunter 7000 Series Triple Quad GC/MS
- MassHunter 7200 Accurate-Mass Q-TOF GC/MS System
- MassHunter Data Analysis

Insert the memory stick into a USB port, and follow the system prompts to install these manuals on your computer. Once installed, icons will be placed on your desktop for quick access to your manuals.



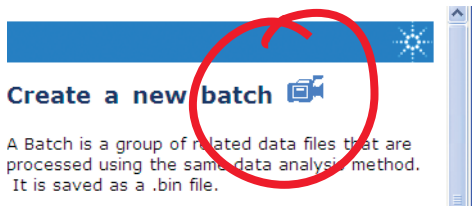
# Online Help



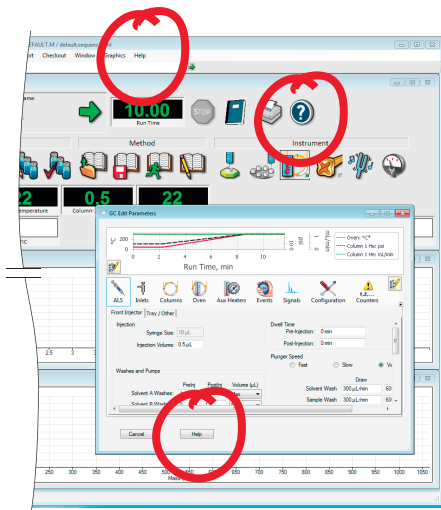
Help topics are written as detailed **step-by-step instructions** that walk you through routine tasks. Many include software demonstration videos.

**Getting Started** videos provide the information you need to start using your system quickly and efficiently.

**Advanced videos** explain some of MassHunter's more intricate, but perhaps less frequently used functions.



Any topic with the **camera icon** has a video linked to it. Watch these videos to see a demonstration of using the described feature in your MassHunter software.



Access online **Help** through the **Help** icon, the **Help** menu, **F1**, or the **Help** button on any dialog box.



## Familiarization Guides



There are several familiarization guides included on the **GC/MS Software Information and Manuals** memory stick, including:

- **Getting Started**
- **Data Acquisition**
- **Quantitative Analysis**
- **Qualitative Analysis**
- **Unknowns Analysis**
- **Reporting**

These and other manuals provide detailed step-by-step instructions on how to prepare your system for data acquisition, how to create acquisition methods, qualitative methods, and quantitative methods, how to use the Unknowns Analysis software, and how to use the MassHunter reporting features.

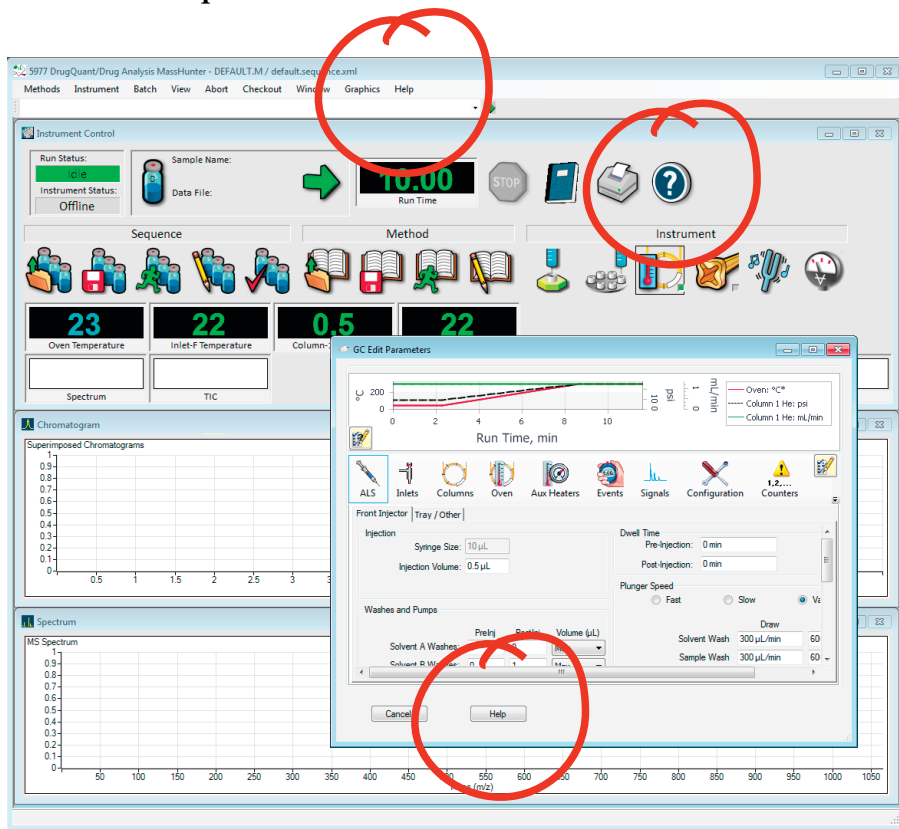
Once installed, you may access **Familiarization Guides** through the desktop icon, online **Help**, or the **Start/ALL Programs/...** menu.

# Data Acquisition Software

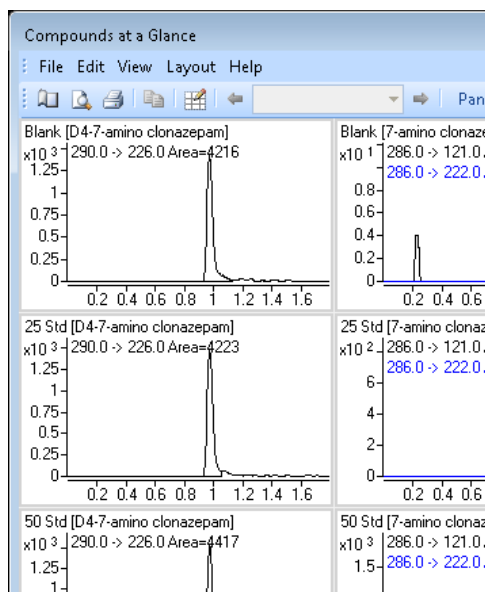
From one screen in the **MassHunter Data Acquisition** software you can:

- Start and stop the instrument
- Download instrument settings in real time
- Load, edit, create, or run a method
- Load, edit, create, check, or run a sequence
- Evaluate the MS parameters
- Autotune the MS parameters
- Monitor the real-time conditions of the instrument parameters
- View the instrument logs
- View and print the real-time plot for chromatograms and instrument spectra
- Select and label the total ion chromatograms (TIC) or extracted ion chromatograms (EIC) that you want to appear in the real-time plot

Press **F1**, use the **Help** menu, the **Help** icon, or the **Help** button on any dialog box to access Online **Help** for **MassHunter Data Acquisition** software.



## Quantitative Analysis Software



The **MassHunter Quantitative Analysis** software will quantify very low amounts of sample.

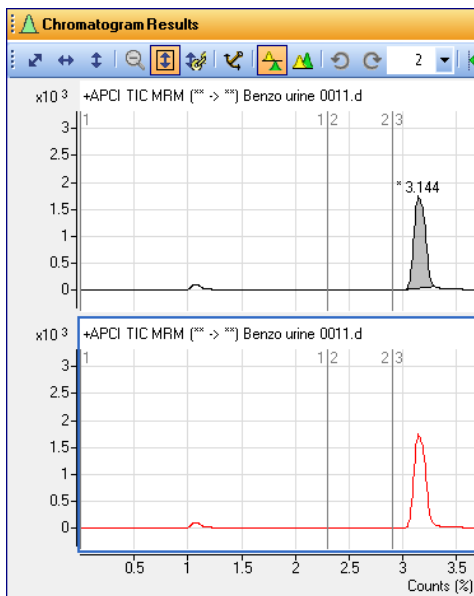
From one screen in the **MassHunter Quantitative Analysis** software you can:

- Import information directly from the acquisition method
- Use the curve-fit assistant to test all fits and statistics on the calibration curve quality
- Use the **Compounds at a Glance** feature to review all the chromatograms in your batch at once, side-by-side
- Quickly scan the batch table and see your quality metrics such as high outliers (in red) or low outliers (in blue)
- Press **F1** to access context sensitive online **Help**

Once installed, you may access **Familiarization Guides** for this software through the desktop icon, online **Help**, or the **Programs/Start...** menu.

Compound: 7... ISTD: D4-7-										
7-amino c...							Qualifier...		D4-7-amino...	
Exp. Conc.	RT	Resp.	MI	Calc. Conc.	Final Conc.	Accuracy	Ratio	MI	RT	Resp.
25.0000	0.982	2400		29.0230	29.0230	116.1	79.1		0.974	4223
50.0000	0.982	5192		48.6966	48.6966	97.4	79.2		0.974	4417
125.0000	0.982	12941		111.0894	111.0894	88.9	85.4		0.973	4173
250.0000	0.984	28338		227.0264	227.0264	90.8	82.6		0.977	4243
500.0000	0.983	60068		534.1646	534.1646	106.8	74.5		0.975	3717
									0.972	4216
									0.976	4599
189.0000	0.982	17646		145.8304	145.8304	77.2	75.8		0.974	4228

## Qualitative Analysis Software



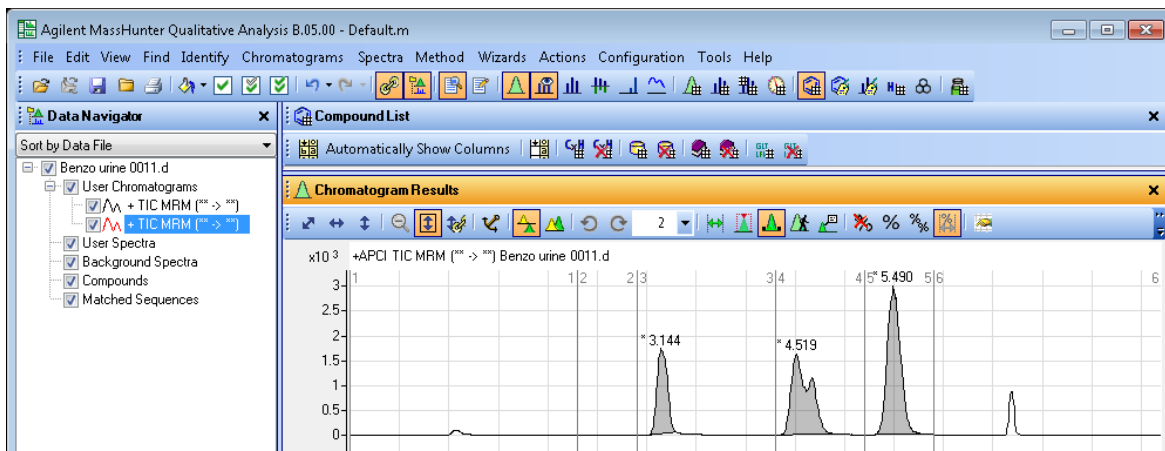
The **MassHunter Qualitative Analysis** software uses advanced data mining and processing tools, including integrated deconvolution algorithms, to rapidly and accurately find all detectable compounds in your samples and easily confirm targets or identify unknowns.

This software presents large amounts of data for review in one central location. From one screen you can:

- Extract chromatograms
- View and extract peak spectra
- Subtract background
- Integrate the chromatogram
- Find compounds and generate formulas
- Press **F1** to see context sensitive online **Help**

You can also set up methods to automatically do the tasks in the above list, as well as others, when you open the data files.

Once installed, you may access **Familiarization Guides** for this software through the desktop icon, online **Help**, or the **Programs/Start...** menu.



# Report Designer Add-in

MassHunter stores all results in XML format and uses Microsoft Excel and the **Report Designer Add-in** for reporting. Many application-specific templates and customized reports, including custom calculations for your specific application needs, are available in the familiar Excel environment.

Using these preconfigured templates, you can easily create reports in the **Data Acquisition** software, the **Qualitative Analysis** software, and the **Quantitative Analysis** software.

You can also customize many of the application-specific templates, including the custom calculations, with the **Report Designer Add-in**.

Once installed, you may access **Familiarization Guides** for this software through the desktop icon, online **Help**, or the **Programs/Start...** menu.

Add tables and graphics using tool buttons

Print preview

Drag and drop columns from XML source

Format headers and footers using Excel

Use Excel number formatting

Use conditional formatting for outlier flagging

The screenshot displays the Microsoft Excel interface with the Report Designer Add-in. The ribbon includes buttons for 'Process Report', 'Clear Results', 'Add Data', 'Add Graphics', 'Add Formatting', 'Advanced Properties', and 'Validate Design'. A task pane on the right shows 'XML Source' data with columns like 'AnalysisTimeStamp', 'AnalystName', and 'BatchName'. Two report preview windows are shown: 'Quantitative Analysis Sample Report' and 'Accuracy Outlier Report'. The 'Accuracy Outlier Report' features a table with columns for 'Compound Name', 'Level', 'Exp Conc', 'Max Value', 'LQI', and 'Outlier'. The 'Outlier' column contains values like '119.4' and '138.2', with some cells highlighted in red. The 'Quantitative Analysis Sample Report' shows a chromatogram and a table of compounds.

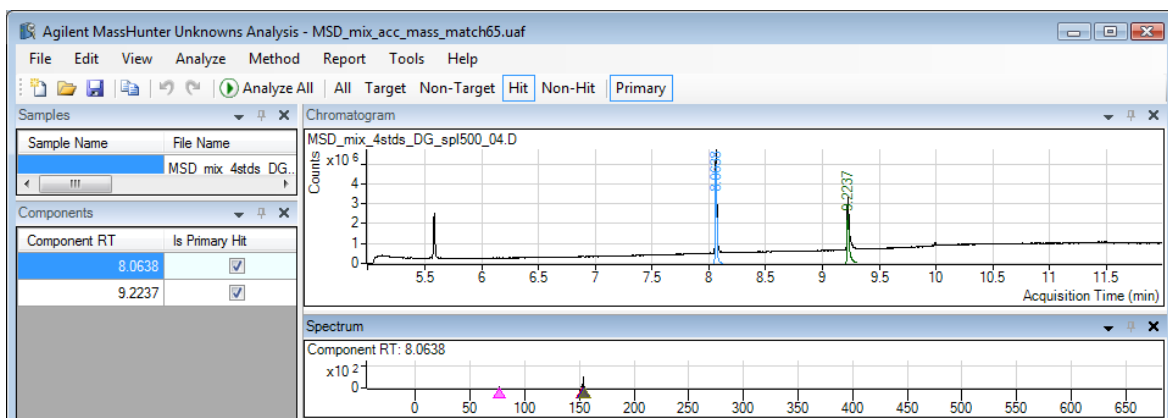
# Unknown Analysis Software

The **MassHunter Unknowns Analysis** software identifies compounds that may be present in a sample batch beyond those that have been identified in the **MassHunter Quantitative Analysis** software.

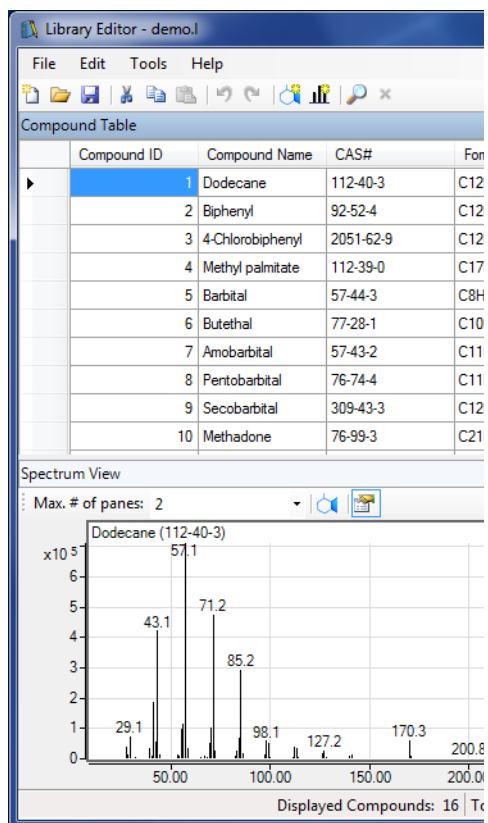
From one screen in the MassHunter Unknowns Analysis you can:

- Import data directly from the **MassHunter Quantitative Analysis** software
- Use optimized deconvolution and library match algorithms to identify target and non-target hits
- View chromatograms, component lists, spectrums, ion peaks, and molecular structures side-by-side
- Easily review library match and peak shape metrics of unknown components in table and spectrum formats

Once installed, you may access **Familiarization Guides** for this software through the desktop icon, online **Help**, or the **Programs/Start...** menu.



# Library Editor Software



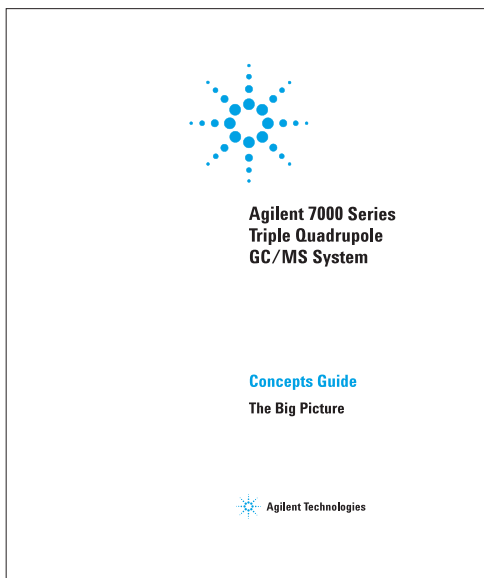
The **MassHunter Library Editor** software customizes libraries used to identify compounds and components in the **MassHunter Qualitative** and **Quantitative Data Analysis** software.

From one screen in the MassHunter Library Editor you can:

- Add compounds to a library
- Copy spectral data from your data analysis software to a library
- Add a structure to your custom library
- Import JCAMP files into a custom library
- Create a reference pattern library

Once installed, you may access **Familiarization Guides** for this software through the desktop icon, online **Help**, or the **Programs/Start...** menu.

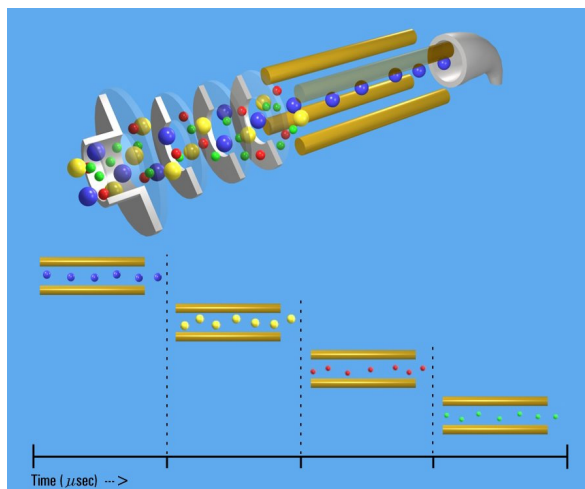
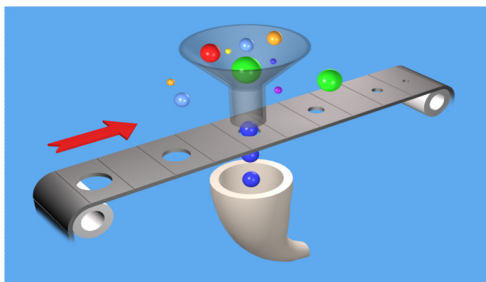
# Concepts Guide



To learn how your Agilent 7000 Series Triple Quadrupole GC/MS system works in conjunction with the MassHunter software, take a look at the **Concepts Guide**. This document includes:

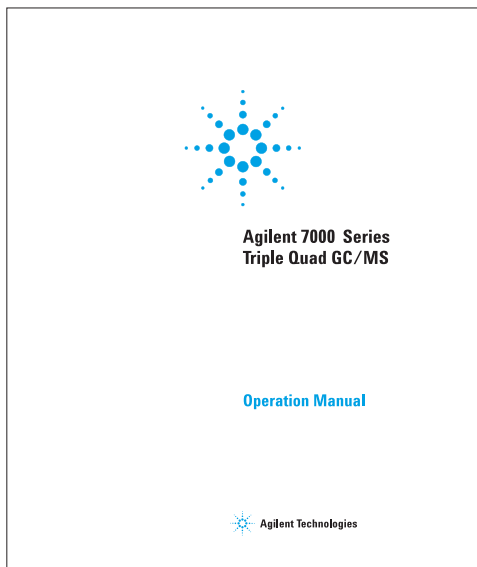
- Conceptual models
- Illustrations
- Screen captures
- An overview of how the 7000 Series Triple Quadrupole works
- Concepts behind the design of the Agilent MassHunter Data Acquisition software
- The theory behind Chemical Ionization in GC/MS

Once installed, you may access this guide through the desktop icon, or the **Programs/Start...** menu.





# Operation Manual

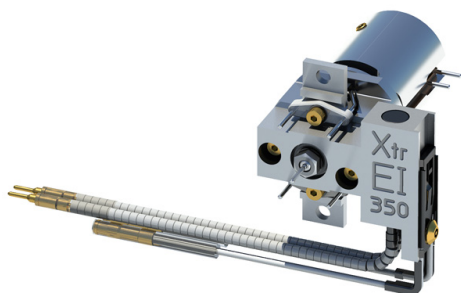
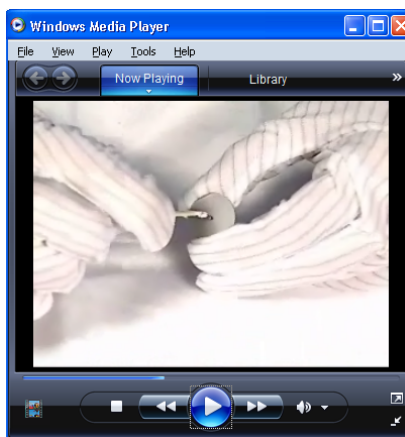


Your Agilent 7000 Series Triple Quadrupole GC/MS system is extremely powerful and flexible. Refer to the **Operation Manual** for extensive information on operating the instrument and performing routine maintenance on it. Included are **step-by-step instructions and videos** on installing GC columns, operating in electron impact (EI) mode, general maintenance procedures, and more.

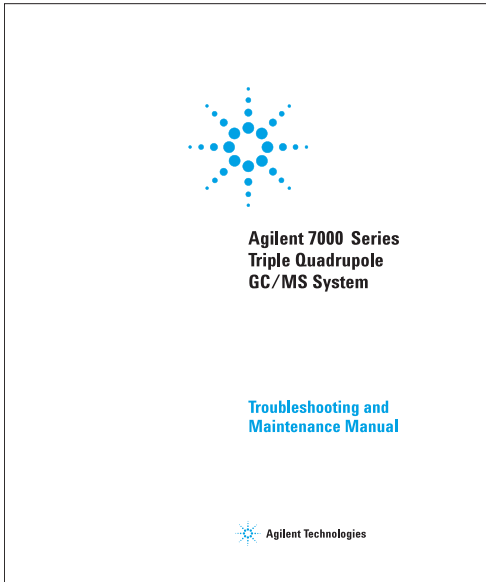
Once installed, you may access this guide through the desktop icon, or the **Programs/Start...** menu.



Any topic with the camera icon is linked to a video. Watch these videos to learn more.



# Troubleshooting and Maintenance Manual



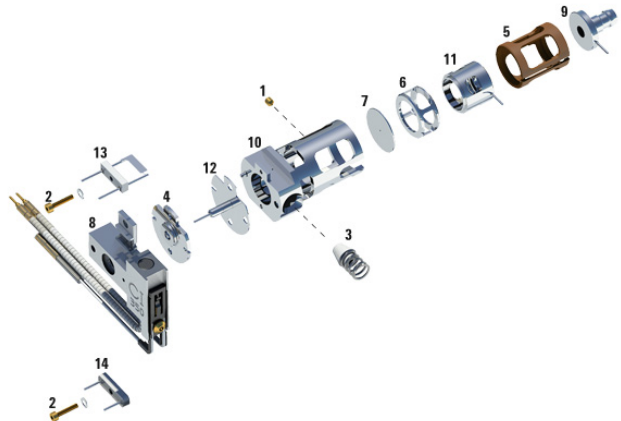
The Agilent 7000 Series Triple Quadrupole GC/MS system consists of a 7000 Series Triple Quadrupole, and a 7890 series Gas Chromatograph (GC).

The **Troubleshooting and Maintenance Manual** for your system includes step-by-step instructions along with videos, IPBs, and annotated high-resolution photos to help you identify the cause of problems in your system. Also included are detailed procedures for completing common maintenance tasks, sections on the components of the GC/MS vacuum system and analyzer system, and a listing of parts.

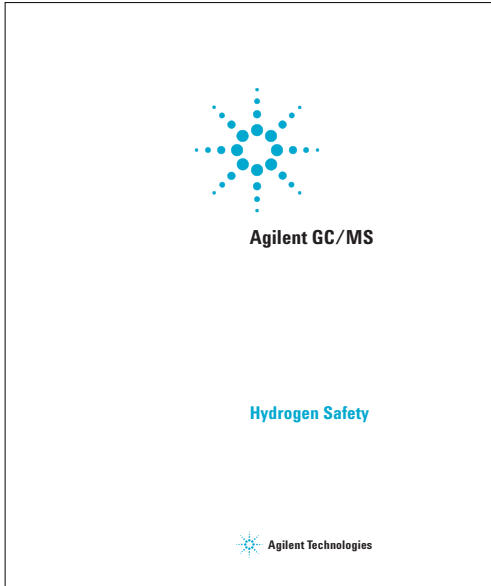
Once installed, you may access this guide through the desktop icon, or the **Programs/Start...** menu.



Any topic with the camera icon is linked to a video. Watch these videos to learn more.



# Hydrogen Safety Manual



Hydrogen presents a number of dangers. Some are general, others are unique to GC or GC/MS operation. Review this document for details on the use of Hydrogen with the GC/MS.

Once installed, you may access this guide through the desktop icon, or the **Programs/Start...** menu.

[www.agilent.com](http://www.agilent.com)

© Agilent Technologies, Inc. 2013

Printed in USA 9/13  
First Edition, September 2013



G7000-90045



**Agilent Technologies**