



Autodesk® Inventor® 2011 Introduction to Assemblies and Drawings

**Student Guide
Revision 1.0**

March 2010

ASCENT - Center for Technical Knowledge®
Autodesk® Inventor® 2011
Introduction to Assemblies and Drawings
Revision 1.0

Prepared and produced by:

ASCENT Center for Technical Knowledge
1001 E. Market Street, Suite 102
Charlottesville, VA 22902

866-527-2368
www.ascented.com



ASCENT - Center for Technical Knowledge is a division of RAND Worldwide Inc., providing custom developed knowledge products and services for leading engineering software applications. ASCENT is focused on specializing in the creation of education programs that incorporate the best of classroom learning and technology-based training offerings.

We welcome any comments you may have regarding this training manual, or any of our products. To contact us please email: education@ASCENTed.com.

© ASCENT - Center for Technical Knowledge, 2010

Printed in the United States of America, all rights reserved. No part of this manual may be reproduced in any form by any photographic, electronic, mechanical or other means or used in any information storage and retrieval system without the written permission of ASCENT, a division of RAND Worldwide, Inc.

Autodesk® Inventor® is a registered trademark of Autodesk, Inc.

General Disclaimer:

NOTWITHSTANDING ANY LANGUAGE TO THE CONTRARY, NOTHING CONTAINED HEREIN CONSTITUTES NOR IS INTENDED TO CONSTITUTE AN OFFER, INDUCEMENT, PROMISE, OR CONTRACT OF ANY KIND. THE DATA CONTAINED HEREIN IS FOR INFORMATIONAL PURPOSES ONLY AND IS NOT REPRESENTED TO BE ERROR FREE. ASCENT, ITS AGENTS AND EMPLOYEES, EXPRESSLY DISCLAIM ANY LIABILITY FOR ANY DAMAGES, LOSSES OR OTHER EXPENSES ARISING IN CONNECTION WITH THE USE OF ITS MATERIALS OR IN CONNECTION WITH ANY FAILURE OF PERFORMANCE, ERROR, OMISSION EVEN IF ASCENT, OR ITS REPRESENTATIVES, ARE ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, LOSSES OR OTHER EXPENSES. NO CONSEQUENTIAL DAMAGES CAN BE SOUGHT AGAINST ASCENT OR RAND WORLDWIDE FOR THE USE OF THESE MATERIALS BY ANY THIRD PARTIES OR FOR ANY DIRECT OR INDIRECT RESULT OF THAT USE.

THE INFORMATION CONTAINED HEREIN IS INTENDED TO BE OF GENERAL INTEREST TO YOU AND IS PROVIDED "AS IS", AND IT DOES NOT ADDRESS THE CIRCUMSTANCES OF ANY PARTICULAR INDIVIDUAL OR ENTITY. NOTHING HEREIN CONSTITUTES PROFESSIONAL ADVICE, NOR DOES IT CONSTITUTE A COMPREHENSIVE OR COMPLETE STATEMENT OF THE ISSUES DISCUSSED THERETO. ASCENT DOES NOT WARRANT THAT THE DOCUMENT OR INFORMATION WILL BE ERROR FREE OR WILL MEET ANY PARTICULAR CRITERIA OF PERFORMANCE OR QUALITY. IN PARTICULAR (BUT WITHOUT LIMITATION) INFORMATION MAY BE RENDERED INACCURATE BY CHANGES MADE TO THE SUBJECT OF THE MATERIALS (I.E. APPLICABLE SOFTWARE). RAND SPECIFICALLY DISCLAIMS ANY WARRANTY, EITHER EXPRESSED OR IMPLIED, INCLUDING THE WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

Table of Contents

Preface	vii
Chapter 1 Assembly Environment.....	1-1
1.1 Assembling Components	1-3
Assembly Examples	1-14
1.2 Content Center	1-19
Searching the Content Center.....	1-21
1.3 Assembly Browser.....	1-22
1.4 Saving Files	1-23
Exercise 1a Assembly Basics I	1-24
Exercise 1b Assembly Basics II	1-39
Exercise 1c Assembly Basics III (Optional).....	1-42
Chapter 2 Manipulating Assembly Display.....	2-1
2.1 Moving and Rotating Assembly Components.....	2-3
Moving Components	2-3
Rotating Components.....	2-3
Updating the Assembly	2-4
2.2 Suppressing Constraints	2-5
2.3 Component Display	2-6
Visible Components	2-6
Enabling Components.....	2-7
Isolating Components	2-7
Section Views.....	2-8
Design Views	2-11
2.4 Selection Options in Assemblies	2-14
Exercise 2a Assemble Components	2-17
Chapter 3 Design Presentation and Animation	3-1
3.1 Exploded View Presentations	3-3
Save Camera	3-11
Exercise 3a Create an Explode Presentation	3-14
Exercise 3b Animate an Assembly.....	3-18

Chapter 4 Assembly Tools	4-1
4.1 Replacing Components	4-3
4.2 Restructuring Components	4-5
Promote	4-5
Demote	4-6
Assembly Folders	4-6
4.3 Driving Constraints	4-8
4.4 Contact Solver	4-11
4.5 Interference	4-13
4.6 Error Recovery	4-15
Exercise 4a Using Assembly Tools	4-16
Exercise 4b Replacing Components	4-22
Exercise 4c Restructuring the Assembly	4-26
Exercise 4d Drive Constraints	4-29
Exercise 4e Interference Checking	4-34
Chapter 5 Assembly Parts and Features	5-1
5.1 Assembly Parts	5-3
5.2 Assembly Features	5-7
Participant Parts	5-7
Exercise 5a Mold Assembly	5-9
Chapter 6 Working With Projects	6-1
6.1 New Projects	6-3
Project Tree	6-7
Edit Project Paths	6-8
Library Paths	6-9
Search Sequence	6-10
Sub-Folders in Project Locations	6-10
6.2 Resolving Links	6-12
6.3 The Project Browser	6-16
Exercise 6a Creating a Project File	6-17
Chapter 7 Drawing Basics	7-1
7.1 New Drawing Views	7-3
User-Defined Orientation Views	7-9
Projected Views	7-10
Auxiliary Views	7-11
Section Views	7-12
Detailed Views	7-14

	Break Views	7-15
	Break Out Views	7-16
	Overlay Views	7-17
	Crop Views	7-18
	Draft Views	7-19
7.2	Manipulating Views	7-21
	Delete Views	7-21
	Suppress Views	7-21
	Move Views	7-21
	View Alignment	7-22
	Change View Scale	7-22
	Editing View Labels	7-22
	Replace Models	7-23
	View Properties	7-24
	Editing Sheets	7-24
	Exercise 7a Create a Drawing I	7-25
	Exercise 7b Create a Drawing II	7-34
	Exercise 7c Create a Drawing III	7-38
Chapter 8	Detailing Drawings	8-1
8.1	Dimensions	8-3
	Model Dimensions	8-3
	Drawing Dimensions	8-5
	Editing Drawing Dimensions	8-9
	Dimension Styles	8-12
8.2	Parts List	8-13
	Editing the Parts List	8-15
8.3	Balloons	8-17
	Placing Balloons Individually	8-18
	Placing Balloons Globally	8-18
	Manipulating Balloons	8-19
8.4	Styles and Standards	8-20
	Standards	8-21
	Styles	8-22
	Drawing Sheet Preferences	8-23
8.5	Hatching	8-24
	Exercise 8a Detailing a Drawing I	8-27
	Exercise 8b Detailing a Drawing II	8-38
	Exercise 8c Create a Drawing (Optional)	8-46

Chapter 9 Assembly Bill of Materials	9-1
9.1 Create Virtual Components.....	9-3
9.2 Create Bill of Materials	9-5
View Properties.....	9-12
Part Number Merge Settings	9-14
Exercise 9a Bill of Materials	9-16
Chapter 10 Drawing Annotations	10-1
10.1 Text.....	10-3
Modifying Text.....	10-4
Adding Model or User Parameters as Text.....	10-4
Adding Properties as Text.....	10-5
10.2 Symbols	10-6
10.3 Hole and Thread Notes	10-8
Creating a Hole or Thread Note	10-8
Adding Text to a Hole Note.....	10-9
Editing a Hole Note	10-10
Hole Quantity in Notes	10-10
Hiding Hole or Thread Note Values	10-11
10.4 Chamfer Notes	10-12
Creating Chamfer Notes	10-12
Editing Chamfer Notes.....	10-12
10.5 Center Marks and Center Lines	10-14
Center Marks	10-14
Center Line	10-14
Center Line Bisector	10-15
Centered Pattern.....	10-15
10.6 Hole Tables.....	10-16
10.7 Revision Tables and Tags.....	10-19
Exercise 10a Adding Text and Symbols.....	10-22
Exercise 10b Notes, Center Marks and Center Lines.....	10-30
Exercise 10c Adding a Revision Table and Tags	10-36
Exercise 10d Adding Hole Tables and Hole Notes	10-41
Appendix A DWG TrueConnect	A-1
A.1 Introduction	A-3
A.2 Inventor & AutoCAD Files	A-4
AutoCAD Files in Inventor.....	A-4
Inventor Files in AutoCAD.....	A-5
DWG Template	A-6
Shared Objects	A-6

A.3	Geometry Formatting Tools	A-7
	Exercise A1 DWG Files in Inventor	A-9
	Exercise A2 Inventor DWG in AutoCAD (Optional)	A-16
Appendix B	Additional Exercises	B-1
	Exercise B1 Drawing Creation I.....	B-3
	Exercise B2 Drawing Creation II.....	B-4
	Exercise B3 Drawing Creation III.....	B-6
	Index.....	Index-1

PROPERTY OF ASCENT
866-527-2368