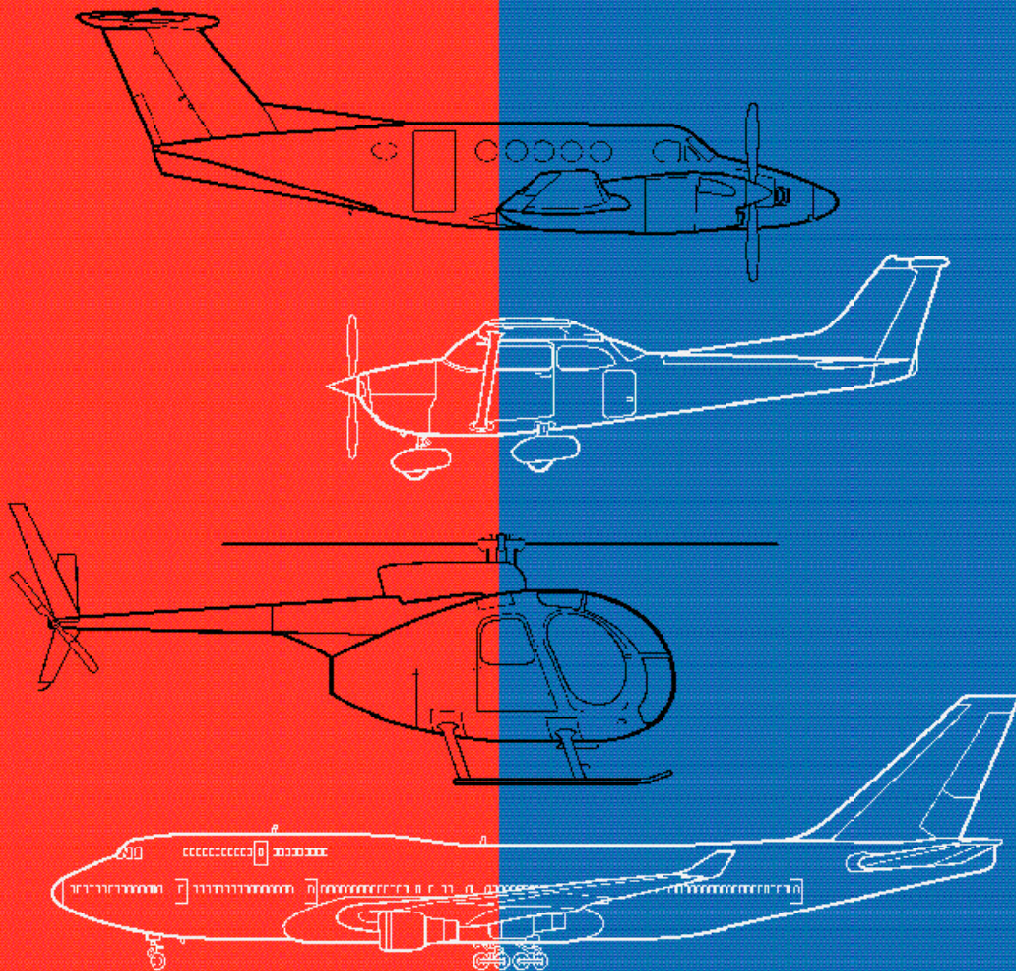




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Aircraft Weight and Balance Handbook



Aircraft Weight and Balance Handbook

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U.S. DEPARTMENT OF TRANSPORTATION
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Preface

FAA-H-8083-1, *Aircraft Weight and Balance Handbook*, has been prepared in recognition of the importance of weight and balance technology in conducting safe and efficient flight. The objective of this handbook is twofold: to provide the Aviation Maintenance Technician (AMT) with the method of determining the empty weight and empty-weight center of gravity (EWCG) of an aircraft, and to furnish the flight crew with information on loading and operating the aircraft to ensure its weight is within the allowable limit and the center of gravity (CG) is within the allowable range.

Any time there is a conflict between the information in this handbook and specific information issued by an aircraft manufacturer, the manufacturer's data takes precedence over information in this handbook. Occasionally, the word *must* or similar language is used where the desired action is deemed critical. The use of such language is not intended to add to, interpret, or relieve a duty imposed by Title 14 of the Code of Federal Regulations (14 CFR).

This handbook supersedes Advisory Circular (AC) 91-23A, *Pilot's Weight and Balance Handbook*, revised in 1977.

Comments regarding this handbook should be sent to U.S. Department of Transportation, Federal Aviation Administration, Airman Testing Standards Branch, AFS-630, P.O. Box 25082, Oklahoma City, OK 73125.

This publication may be purchased from the Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954, or from the U.S. Government Printing Office bookstores located in major cities throughout the United States.

AC 00-2, *Advisory Circular Checklist*, transmits the current status of Federal Aviation Administration (FAA) advisory circulars and other flight information publications. This checklist is free of charge and may be obtained by sending a request to U.S. Department of Transportation, Subsequent Distribution Office, SVC-121.23, Ardmore East Business Center, 3341 Q 75th Avenue, Landover, MD 20785. The checklist is also available on the Internet at <http://www.faa.gov/abc/ac-chklst/actoc.htm>.

Acknowledgments

This book was produced as a combined FAA and industry effort.

Introduction

This handbook begins with the basic principle of aircraft weight and balance control, emphasizing its importance and including examples of documentation furnished by the aircraft manufacturer and by the FAA to ensure the aircraft weight and balance records contain the proper data.

Procedures for the preparation and the actual weighing of an aircraft are described, as are the methods of determining the location of the empty-weight center of gravity (EWCG) relative to both the datum and the mean aerodynamic chord (MAC).

Loading computations for general aviation aircraft are discussed, using both loading graphs and tables of weight and moment indexes.

Information is included that allows an Aviation Maintenance Technician (AMT) to determine the weight and center of gravity (CG) changes caused by repairs and alterations. This includes instructions for conducting adverse-loaded CG checks, also explaining the way to determine the amount and location of ballast needed to bring the CG within allowable limits.

Weight and balance control for large aircraft is discussed, including cargo management, takeoff and landing conditions, and the determination of fuel dump time for emergency conditions. Examples are also given for weight and balance control of commuter category airplanes in both the passenger and cargo configuration.

The unique requirements for helicopter weight and balance control are discussed, including the determination of lateral CG and the way both lateral and longitudinal CG change as fuel is consumed.

A chapter is included giving the methods and examples of solving weight and balance problems, using hand-held electronic calculators, E6-B flight computers, and a dedicated electronic flight computer.

Contents

Chapter 1		
Weight and Balance Control	1-1	
Why is Weight and Balance Important?	1-1	
Weight Control	1-2	
Effects of Weight	1-2	
Weight Changes	1-3	
Stability and Balance Control	1-4	
Chapter 2		
Weight and Balance Theory and Documentation	2-1	
Weight and Balance Theory	2-1	
Aircraft Arms, Weights, and Moments	2-1	
The Law of the Lever	2-2	
Determining the CG	2-2	
Shifting the CG	2-4	
Shifting the Airplane CG	2-6	
Weight and Balance Documentation	2-7	
FAA-Furnished Information	2-7	
Manufacturer-Furnished Information	2-12	
Chapter 3		
Weighing the Aircraft and Determining the Empty-Weight Center of Gravity	3-1	
Requirements	3-1	
Equipment for Weighing	3-1	
Preparation for Weighing	3-2	
Weigh Clean Aircraft Inside Hangar	3-2	
Equipment List	3-2	
Ballast	3-3	
Draining the Fuel	3-3	
Oil	3-3	
Other Fluids	3-3	
Configuration of the Aircraft	3-3	
Jacking the Aircraft	3-3	
Leveling the Aircraft	3-4	
Determining the Center of Gravity	3-4	
Empty-Weight Center of Gravity Formulas	3-5	
Datum Forward of the Airplane —		
Nose Wheel Landing Gear	3-5	
Datum Aft of the Main Wheels —		
Nose Wheel Landing Gear	3-6	
Datum Forward of the Main Wheels —		
Tail Wheel Landing Gear	3-6	
Datum Aft of the Main Wheels —		
Tail Wheel Landing Gear	3-7	
Location with Respect to the Mean Aerodynamic Chord	3-7	
Chapter 4		
General Aviation Aircraft Operational Weight and Balance Computations	4-1	
Determining the Loaded Weight and CG	4-1	
Computational Method	4-1	
Loading Graph Method	4-2	
Multiengine Airplane Weight and Balance Computations	4-6	
Determining the Loaded CG	4-6	
The Chart Method Using Weight, Arm, and Moments	4-7	
Determining the CG in Percent of MAC	4-7	
The Chart Method Using Weight and Moment Indexes	4-7	
Chapter 5		
Center of Gravity Change After Repair or Alteration	5-1	
Equipment List	5-1	
Weight and Balance Revision Record	5-3	
Weight Changes Caused by a Repair or Alteration	5-3	
Computations Using Weight, Arm, and Moment ...	5-3	
Computations Using Weight and Moment Indexes	5-4	
Empty-Weight CG Range	5-4	
Adverse-Loaded CG Checks	5-4	
Forward Adverse-Loaded CG Check	5-5	
Aft Adverse-Loaded CG Check	5-6	
Ballast	5-7	
Temporary Ballast	5-7	
Permanent Ballast	5-7	

Chapter 6	
Weight and Balance Control—	
Large Aircraft	6-1
Weighing Requirements	6-1
Individual Aircraft Weight	6-1
Fleet Weights	6-2
Weighing Procedures	6-2
Locating and Monitoring Weight and CG Location	6-2
Determining the Empty Weight and EWCG	6-2
Determining the Loaded CG of the Airplane in Percent MAC	6-3
On Board Aircraft Weighing System	6-3
Determining the Correct Stabilizer Trim Setting	6-5
Stabilizer Trim Setting in % MAC	6-5
Stabilizer Trim Setting in Units ANU (Airplane Nose Up)	6-5
Determining CG Changes Caused by	
Modifying the Cargo	6-5
Effects of Loading or Offloading Cargo	6-5
Effects of Onloading Cargo	6-6
Effects of Shifting Cargo from One Hold to Another	6-8
Determining Cargo Pallet Loads with Regard to Floor Loading Limits	6-9
Determining the Maximum Amount of Payload That Can Be Carried	6-10
Determining the Landing Weight	6-10
Determining the Minutes of Fuel Dump Time	6-12
Weight and Balance of Commuter	
Category Airplanes	6-13
Determining the Loaded Weight and CG	6-13
Determining the Changes in CG When Passengers are Shifted	6-17
Determining Changes in Weight and CG When the Airplane is Operated in its Cargo Configuration	6-18
Determining the CG Shift When Cargo is Moved From One Section to Another	6-18
Determining the CG Shift When Cargo is Added or Removed	6-19
Determining Which Limits are Exceeded	6-19
Chapter 7	
Weight and Balance Control—Helicopters	7-1
Determining the Loaded CG of a Helicopter	7-2
Effects of Offloading Passengers and Using Fuel ..	7-3
Chapter 8	
Use of Computers for Weight and Balance Computations	8-1
Using an Electronic Calculator to Solve Weight and Balance Problems	8-1
Using an E6-B Flight Computer to Solve Weight and Balance Problems	8-1
Using a Dedicated Electronic Flight Computer to Solve Weight and Balance Problems	8-3
Typical Weight and Balance Problems	8-3
Determining CG in Inches From the Datum	8-3
Determining CG, Given Weights and Arms	8-5
Determining CG, Given Weights and Moment Indexes	8-5
Determining CG in Percent of Mean Aerodynamic Chord	8-6
Determining Lateral CG of a Helicopter	8-6
Determining DCG Caused by Shifting Weights	8-6
Determining Weight Shifted to Cause Specified DCG	8-7
Determining Distance Weight is Shifted to Move CG a Specific Distance	8-7
Determining Total Weight of an Aircraft That Will Have a Specified DCG When Cargo is Moved ...	8-7
Determining Amount of Ballast Needed to Move CG to a Desired Location	8-7
Appendix	
<i>Supplemental Study Materials</i> <i>for Aircraft Weight and Balance</i>	Appendix-1
Glossary	Glossary-1
Index	Index-1