



Advisory Circular

Subject: Air Operator Weight and Balance Control Procedures – Subparts 704 and 705 of the Canadian Aviation Regulations

Issuing Office:	Civil Aviation, Standards	Document No.:	AC 700-022
File Classification No.:	Z 5000-34	Issue No.:	02
RDIMS No.:	15179163 V8	Effective Date:	2019-08-01

Table of contents

- 1.0 Introduction 2**
- 1.1 Purpose 2
- 1.2 Applicability 2
- 1.3 Description of changes..... 2
- 2.0 References and requirements..... 2**
- 2.1 Reference documents 2
- 2.2 Cancelled documents..... 3
- 2.3 Definitions and abbreviations 3
- 3.0 Background 3**
- 4.0 Policy..... 4**
- 5.0 Acceptable Procedures 4**
- 6.0 Information management 5**
- 7.0 Document history..... 5**
- 8.0 Contact us..... 5**
- Appendix A — Standard Weight of Passengers Weight Aged 12 Years or Older 6**

1.0 Introduction

- (1) This Advisory Circular (AC) is provided for information and guidance purposes. It describes an example of an acceptable means, but not the only means, of demonstrating compliance with regulations and standards. This AC on its own does not change, create, amend or permit deviations from regulatory requirements, nor does it establish minimum standards.

1.1 Purpose

- (1) The purpose of this AC is to advise Transport Canada Civil Aviation (TCCA) and the Canadian air operators operating under Subparts 704 and 705 of the Canadian Aviation Regulations (CARs) that the average passenger weights as published within the Transport Canada Aeronautical Information Manual (TC AIM) is current and continues to be applicable for weight and balance calculations.

1.2 Applicability

- (1) This document applies to the weight and balance control program of air operators, operating under Subparts 704 and 705 of the CARs.
- (2) Air operators conducting operations under Subpart 703 of the CARs are advised to review AC 703-004 Issue 04 for guidance on new weight and balance control procedures specific to that Subpart.

1.3 Description of changes

- (1) Immigration, Refugees and Citizenship Canada (IRCC) have updated the Canadian Passport (amongst other documents) to now include Canadians who do not identify solely as male or female. The changes included in this AC will provide guidance to Canadian air operators, operating under Subparts 704 and 705 of the CARs on methods to include these changes within their weight and balance control programs.
- (2) The weights depicted in Appendix A represent the changes made to the Canadian Community Health Survey in 2009.

2.0 References and requirements

2.1 Reference documents

- (1) It is intended that the following reference materials be used in conjunction with this document:
 - (a) Part VII, Subpart 3 of the Canadian Aviation Regulations (CARs) — Air Taxi Operations;
 - (b) Part VII, Subpart 4 of the CARs – Commuter Operations;
 - (c) Part VII, Subpart 5 of the CARs – Airlines Operations;
 - (d) Subpart 723 of the Commercial Air Service Standards (CASS) – Air Taxi Operations;
 - (e) Subpart 724 of the CASS – Commuter Operations; and
 - (f) Rules of the Air and Traffic Services (RAC) 3.5 Weight and Balance Form of TC AIM.

2.2 Cancelled documents

- (1) Not applicable.
- (2) By default, it is understood that the publication of a new issue of a document automatically renders any earlier issues of the same document null and void.

2.3 Definitions and abbreviations

- (1) The following **definitions** are used in this document:
 - (a) **Air Operator Standard Weight:** means approved standard weights determined by the air operator through an approved survey and statistical computation in accordance with this guidance. They are applicable only to that air operator and may be used in lieu of published standard weights in circumstances consistent with those under which the survey was conducted; and
 - (b) **Published Standard Weight:** means the average passenger weight as published in RAC 3.5 – Weight and Balance Form of the TC AIM which includes the allowances for clothing and carry-on baggage, for use by the operator for weight and balance calculations of the aircraft, without actual weighing.
- (2) The following abbreviations are used in this document:
 - (a) **AC:** advisory circular;
 - (b) **CARs:** Canadian Aviation Regulations;
 - (c) **FAA:** Federal Aviation Administration;
 - (d) **TCCA:** Transport Canada Civil Aviation;
 - (e) **TC AIM:** Transport Canada Aeronautical Information Manual.

3.0 Background

- (1) Many air operators, operating under Subparts 704 and 705 of the CARs use the Standard Average Passenger Weights published in the TC AIM. Therefore, it becomes necessary to keep these values current in order to avoid inconsistencies between the aircraft weight in the weight and balance report and the actual weight of the aircraft once loaded.
- (2) Accidents, in both Canada and the United States (U.S.) have involved discrepancies between the actual weight and the weight recorded in the weight and balance report.
- (3) Investigation into these accidents resulted in the FAA undertaking a review of the aircraft, passenger and cargo weight and balance material in the U.S. and subsequently releasing AC 120-27E. This document provides guidance, and limitation on the use of standard average weights.
- (4) As a consequence of the investigation, TCCA also determined to update the published average standard passenger weights. This was accomplished by obtaining the average Canadian weight data from Statistics Canada. The Canadian Community Health Survey Cycle 2.1, 2003, forms the basis for the current values of the average Canadian weights, and these are tabulated in RAC 3.5 - Weight and Balance Form of TC AIM.
- (5) TCCA requires the Company Operations Manual (COM) to be tailored to the individual air operator's type of Weight and Balance Control System and this program is to be approved by the an air operator's principal Civil Aviation Safety Inspector (CASI), Flight Operations.

- (6) In 2019 IRCC began providing Canadians with a third option on all Canadian Passports (and other documents) using the symbol X in place of the male (M) or female (F) gender markers. To ensure that air operators are accounting for Canadians who identify as gender X, the Standard Weight chart used in RAC 3.5 of the TC AIM has been updated.

4.0 Policy

- (1) The referenced regulations prohibit the operation of an aircraft unless the load restrictions, weight and center of gravity of the aircraft conform to the limitations specified in the aircraft flight manual, during every phase of the flight.
- (2) The referenced standards provide a means of compliance with the regulation. The standard is not intended to provide relief from the regulations.
- (3) It is important to note that Sections 724.32 and 725.39 of the CASS state – in part: The weight and balance system required by Sections 704.32 and 705.39 of the Canadian Aviation Regulations shall specify for each flight how the air operator will establish and be responsible for the accuracy of:
- (a) Weight of passengers, carry-on baggage and checked baggage, determined either by actual weight, by using approved standard weights or by using approved survey weights, and the actual weight of the cargo.
- (4) Therefore, it is reasonable to expect air operators to have a means of ensuring that the method used to determine passenger weights for any flight will be accurate.
- (5) The TC AIM average passenger weights are summarized in Appendix A in this document. These weights remain the same as RAC 3.5 of the TC AIM with the addition of a row with the weights for passengers identifying as gender X.

5.0 Acceptable Procedures

- (1) Canadian air operators may use one of the following procedures to meet the weight and balance control requirements for commercial air operations:
- (a) **Actual Weights:** weigh each passenger prior to boarding. This will include all personal clothing and carry-on baggage, as well as any infant travelling with the passenger;
- (b) **Published Standard Weights:** Air operators use the approved standard weights that are based upon or derived from RAC 3.5 of TC AIM published average passenger weights, and shall update their approved standard weights to maintain harmonization with the TC AIM published average passenger weights, whenever amended; and
- (c) **Air Operator Standard Weights:** Air operators using this system, shall only use average weights, including personal clothing and carry-on baggage that have been validated through an approved passenger weight survey and statistical analysis. Air operators who have completed an approved survey within the review time frame stated in their COM shall be deemed to have met this requirement. Where a review period has not been specified in the COM, or that air operators has not completed an approved survey within the past five years, should complete a new survey or move to option (a) or (b).

Note:

Air operators are cautioned that when average passenger weights are used, (option (b) or (c) above) due diligence is required to ensure that the passenger weights used to calculate the passenger load reasonably reflects the actual weights to be carried on any given flight.

6.0 Information management

- (1) Not applicable

7.0 Document history

- (1) Advisory Circular (AC) 700-022, Issue 01, RDIMS 4939880(E), 6880524(F), dated 2011-11-21 – Air Operator Weight and Balance Control Procedures – Subparts 704 And 705 Of The *Canadian Aviation Regulations*.

8.0 Contact us

For more information, please contact:
Commercial Flight Standards (AARTF)
E-mail: services@tc.gc.ca

We invite suggestions for amendment to this document. Submit your comments to:
Civil Aviation Communications Centre
Telephone: 1-800-305-2059
E-mail: services@tc.gc.ca

Document approved by

Robert Sincennes
Director, Standards

Appendix A — Standard Weight of Passengers Weight Aged 12 Years and Up

Summer		Winter
206 lb or 93.4 kg	Males (12 years and up)	212 lb or 96.2 kg
172 lb or 78.1 kg	Females (12 years and up)	178 lb or 80.7 kg
206 lb or 93.4 kg	Gender X	212 lb or 96.2 kg
75 lb or 34 kg	Children 2-11yrs	75 lb or 34 kg
30 lb or 13.6 kg	*infants 0 to less than 2yrs	30 lb or 13.6 kg

*Add where the number of infants exceed 10% of the number of adults

Note: These average weights are derived from a Statistics Canada Survey, Canadian Community Health Survey Cycle 3.1, 2009. On any flight identified as carrying a number of passengers whose weights, including clothing and carry-on baggage will exceed the company approved standard weights, or the TC AIM published average standard passenger weights, the actual weight of such passengers are to be used.

Note: Where no carry-on baggage is permitted or involved, the TC AIM average weights for males, females, or gender X may be reduced by 13 lbs or 5.9 kg.