BOEING 747 series

747-400 with EICAS/CMC and P&W 4000 engines

General Familiarization

by Steve Oebermann

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DETAILS:
This book is a study guide for the Boeing 747-400 Series Aircraft and it includes an additional chapter on the EICAS/CMC. This book is a great tool for review, refresher, new hires, pre-requisite training, and preparation for systems level classes. There are many benefits for students, technicians, teachers, MRO Training Departments, and Airlines alike.

HOW TO ENROLL IN THE CERTIFICATION PROGRAM:
You can convert this Study Guide to the AeroEd certificate program which will reward you with an official Certificate of Completion and the opportunity to collect 56 hours of FAA AMT Awards Credits. Successful completion of this course qualifies for 40 hours FAA AMT Awards Program credit for an FAA certificated mechanics or repairmen, technicians, instructors, and students. All materials required for registration are included in available Certificate Packet. For more information on the program contact your local FSDO Airworthiness Safety Program Manager.

Self Paced Training Study Guide

FIRST EDITION - JULY 2005

DISTRIBUTED BY

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The General Familiarization that this course provides can serve as the springboard for Systems classes and a deeper level of detail. Just contact AeroEd and we will get you started. For the incremental cost of the program you will receive the following items in the Certification Packet: a set of tests or online test login, a registration number, an on-line account to track your Chapter Scores and Mastery Results, upon successful completion you will get a Certificate of Completion and registration information for the FAA AMT Awards Program.

For more information or to enroll in the course contact AeroEd at *www.AeroEd.com* or call 1 585 935-7239

747-400 GENERAL FAMILIARIZATION SELF-PACED

This course covers an overview of the Mechanical Systems to include:

- Description and Operation
- Controls and Indications
- Component Location
- Servicing and Minor Troubleshooting

OBJECTIVES

Upon completion of this training, using the study guide provided and appropriate Maintenance Manuals, the student will be able to:

1. Describe the safety precautions to be observed when working on or near the aircraft and its systems.
2. Describe the locations of principle components.
3. Describe the normal functions of each major system, including terminology and nomenclature.
4. Using the proper maintenance manual reference, perform all aircraft system servicing tasks.
5. Interpret reports provided by the crew members.
6. Understand the EICAS/CMC systems and their operation, messages, components, maintenance, software, and monitoring.

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747-400 GENERAL FAMILIARIZATION SELF-PACED
ATA 06 (7-2005)

MAINTENANCE MANUAL ARRANGEMENT AND NUMBERING SYSTEM

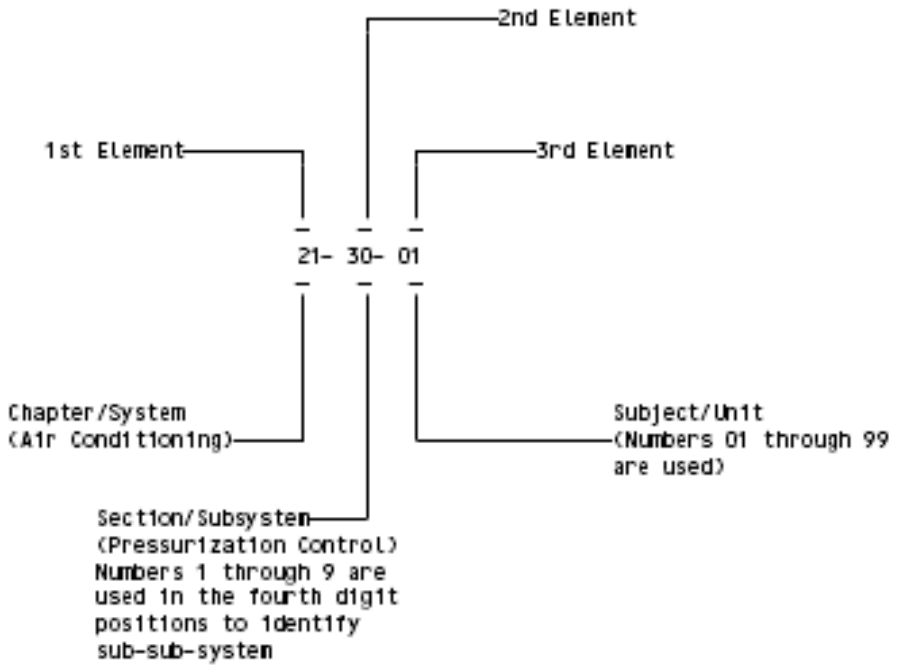
The Maintenance Manual is divided into chapters and groups of chapters. Each group and every chapter has a tab provided for ease of location. The chapterization separates the manual into the primary functions and systems of the airplane. In addition, as a convenience to the user, Power Plant chapters 70 thru 80 are further identified by a sub-logo, PW4000 SERIES ENGINES, placed to the right of the Boeing logo.

All chapters are further divided into sections and subjects to provide for subsystem and individual unit breakout. Each chapter, section and subject is identified by an assigned number. Each page carries the assigned subject number, a page number and the revision date. A revised page may carry a new page code or the same page code, and it may be dated prior to, the same as, or subsequent to, the date of the page it replaces.

The numbering system is described in detail in the following paragraphs.

Chapter Numbering

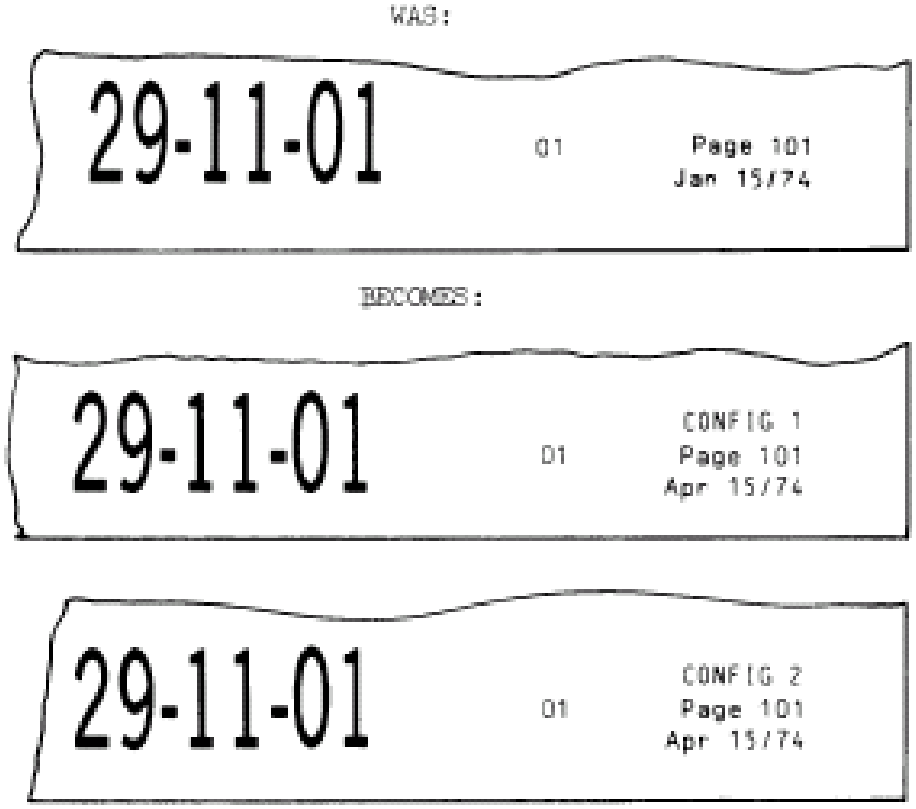
Chapterization of the maintenance manual has provided a functional breakdown of the entire airplane. The chapter breakdown numbering system uses a three element number (XX-XX-XX). It provides for dividing the material into Chapters, Sections, and Subjects. The three elements of the indicator each contain two digits. For example: (See figure on the next page).



The chapter number (1st element) and the first number of the section number (2nd element) is assigned by ATA Specification No. 100. Material which is applicable to a system as a whole uses zeros in the 2nd and 3rd elements of the numbers. That is, the chapter number followed by "-00-00." For example: 22-00-00 (Auto Flight) is used for general description information which provides an outline breakdown of the sections in the chapter.

Effectivity & Configuration Numbering

The Maintenance Manual information effectivity is placed in the effectivity block located in the lower margin of each page. When a page applies to all airplanes, the word ALL will be found in the effectivity block. If the information does not apply to all airplanes, the effectivity codes of the airplanes to which the information does apply will be indicated. A cross-reference tabulation of customer effectivity codes, variable numbers, manufacturing serial numbers and registration numbers is provided. If the effectivity is open-ended the last digits will be 99. For example, 205-999 indicates all airplanes 205 and subsequent.



Page Blocks Configuration Code Identification

Page Numbering

Each subject is page numbered within itself and the identification of each page is by both the subject number and the topic or subtopic page number. These identification numbers appear in the lower outside corner of each page.

The subjects are divided into reasonably small topics and subtopics to enable the user to locate the desired information more readily. The topics as defined by ATA Specification 100 are DESCRIPTION AND OPERATION, TROUBLE SHOOTING, and MAINTENANCE PRACTICES. The subtopics as defined by ATA Specification 100 are SERVICING, REMOVAL/INSTALLATION, ADJUSTMENT/TEST, INSPECTION/CHECK, CLEANING/PAINTING, and APPROVED REPAIRS. The page blocks for these topics and subtopics are as follows:

- DESCRIPTION AND OPERATION (D&O) 1 to 100
- TROUBLE SHOOTING (TS) 101 to 200
- MAINTENANCE PRACTICES (MP) 201 to 300
- SERVICING (SRV) 301 to 400
- REMOVAL/INSTALLATION (R/I) 401 to 500
- ADJUSTMENT/TEST (A/T) 501 to 600
- INSPECTION/CHECK (I/C) 601 to 700
- CLEANING/PAINTING (C/P) 701 to 800
- APPROVED REPAIRS (AR) 801 to 900

Normally, each subtopic is written as an individual topic. However, if all subtopics for one subject are brief, then they are combined into one topic entitled MAINTENANCE PRACTICES and provided in the 201 to 300 page block.

Whenever general maintenance instructions do not fall within one of the designated subtopics, the maintenance instructions will be provided in the 201 to 300 page block. If the 201 to 300 page block consists of only one such subtopic, the 201 to 300 page block title will be Maintenance Practices plus descriptive information indicating procedure content.

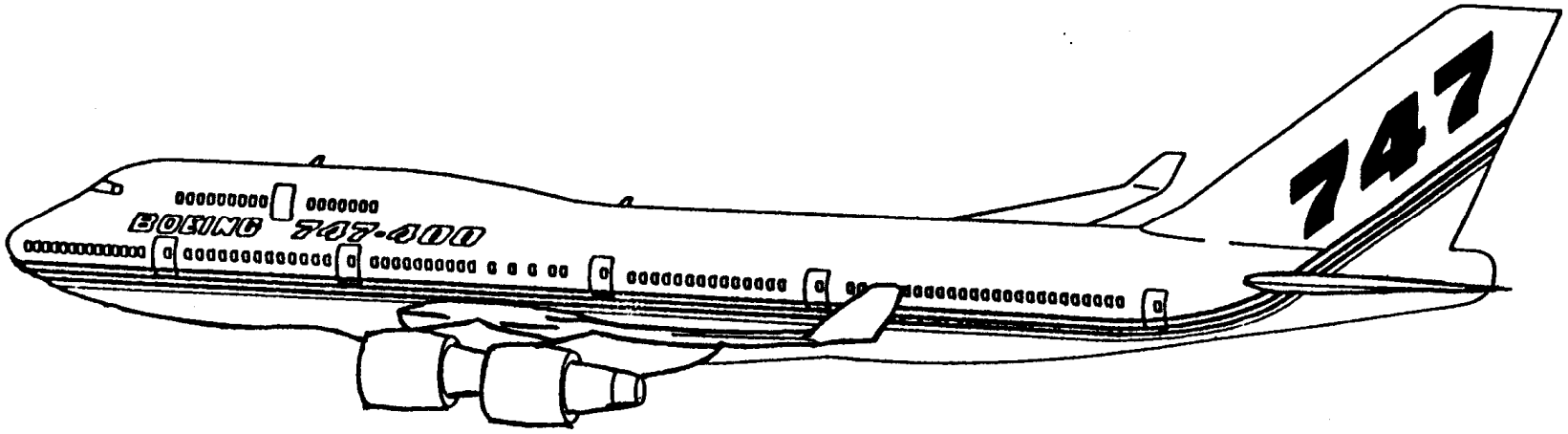
ATA 06 DIMENSIONS & AREAS

747-400 AIRPLANE

The 747-400 is a wide body, four engine airplane designed for long range operation at high payloads. The maximum range is approximately 8100 nautical miles (with horizontal stabilizer fuel tank). The aircraft is a derivative of the 747 family of aircraft (100, 200, & 300) and includes the following major features:

- Two-crew flight deck
- Crew rest area
- Advanced avionics and electronics
- High performance engines
- Advanced APU
- Wing tip extensions and winglets
- Advanced aluminum alloy wings
- Optional horizontal stabilizer fuel tank
- Increased gross weight
- Interior configuration flexibility
- Carbon brakes

The airplane can be configured for carrying cargo on the main deck.


747
BOEING 747-400

PRINCIPAL DIMENSIONS

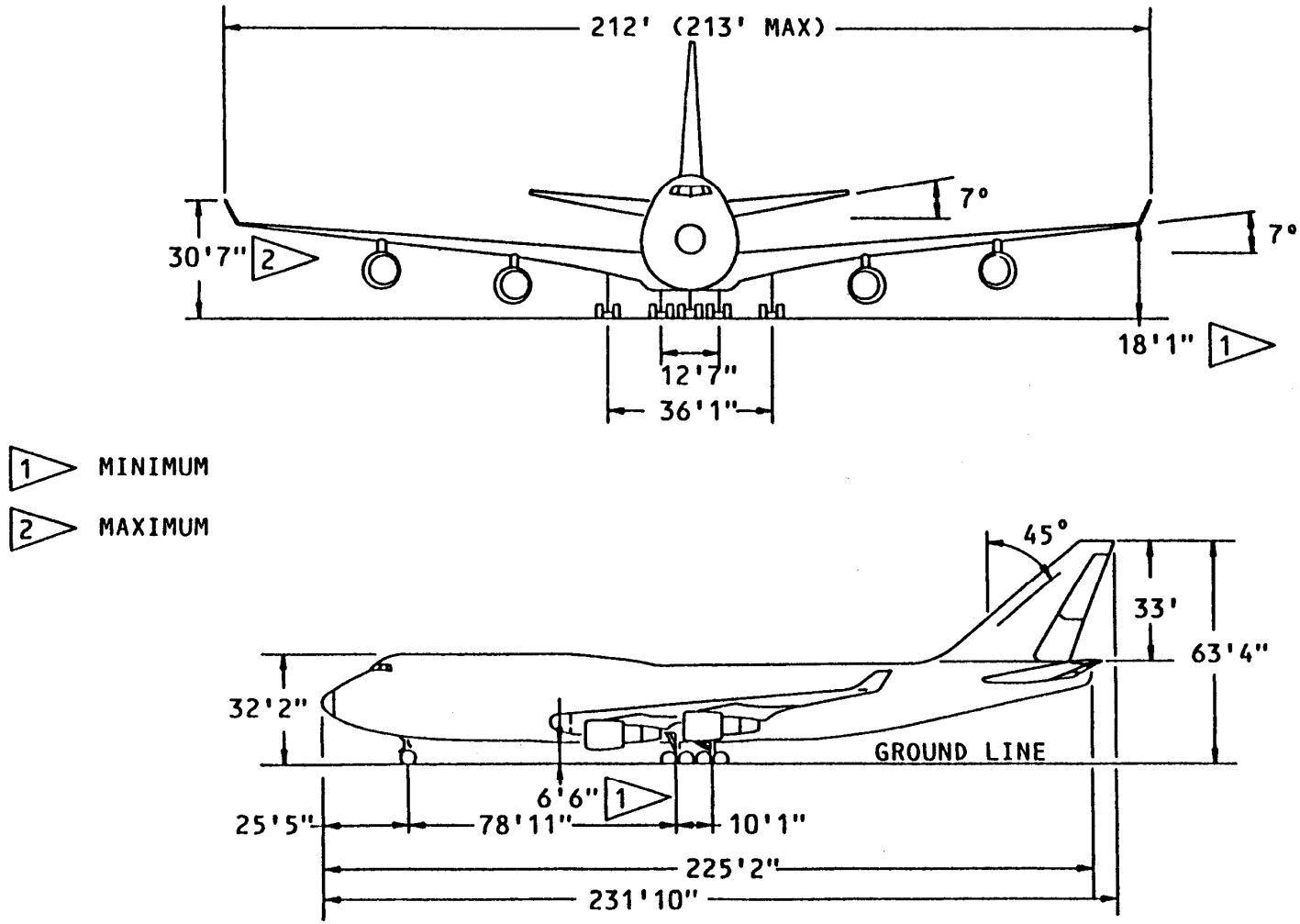
The principal dimensions of the 747-400 airplane are shown with a frontal and profile view.

The maximum width of the airplane is the wing span of 212 feet nominal, maximum is 213 feet, which includes the winglets. The wing and horizontal stabilizer are set at a 7 degree dihedral. The wing dihedral affects engine mounting because the struts are attached perpendicular to the wing.

The maximum height of the airplane, 63 feet 4 inches, is from the ground to the vertical stabilizer tip. The vertical stabilizer is swept back 45 degrees.

The maximum body height of the airplane, 32 feet 2 inches, is from the ground to the upper deck skin.

The maximum length of the airplane, 231 feet 10 inches, is from the radome to the vertical stabilizer tip.



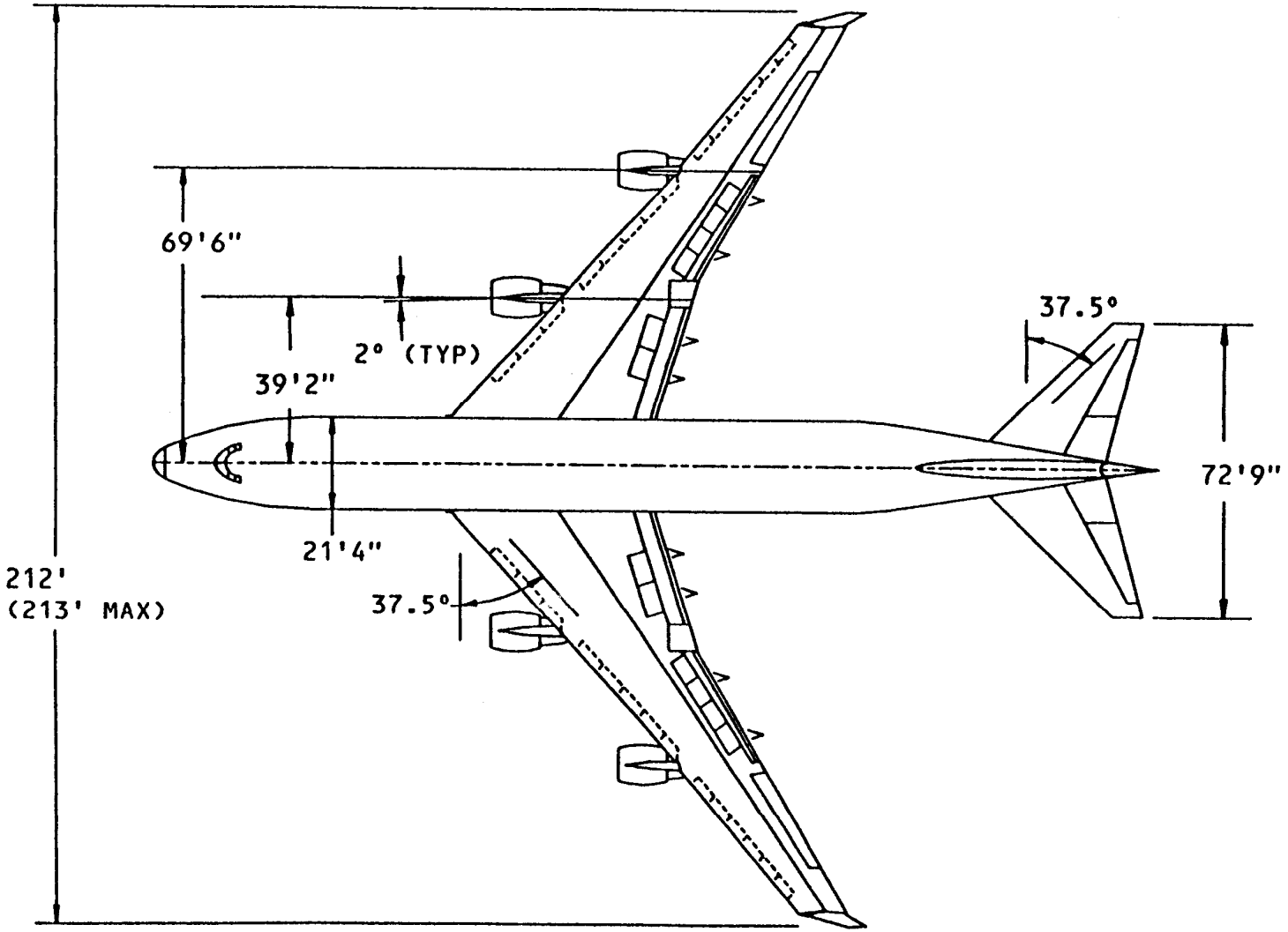
PRINCIPAL DIMENSIONS

Plan View Dimensions

The wing span of the 747-400 is 212 feet nominal, maximum is 213 feet, with a total surface area of about 5660 square feet. The wing and horizontal stabilizer are swept back at 37.5 degrees.

A typical cross section of the body is 21 feet 4 inches.

Each engine is mounted with a 2 degree toe-in to take advantage of the bow-wave effect on the airflow at the nose of the airplane.

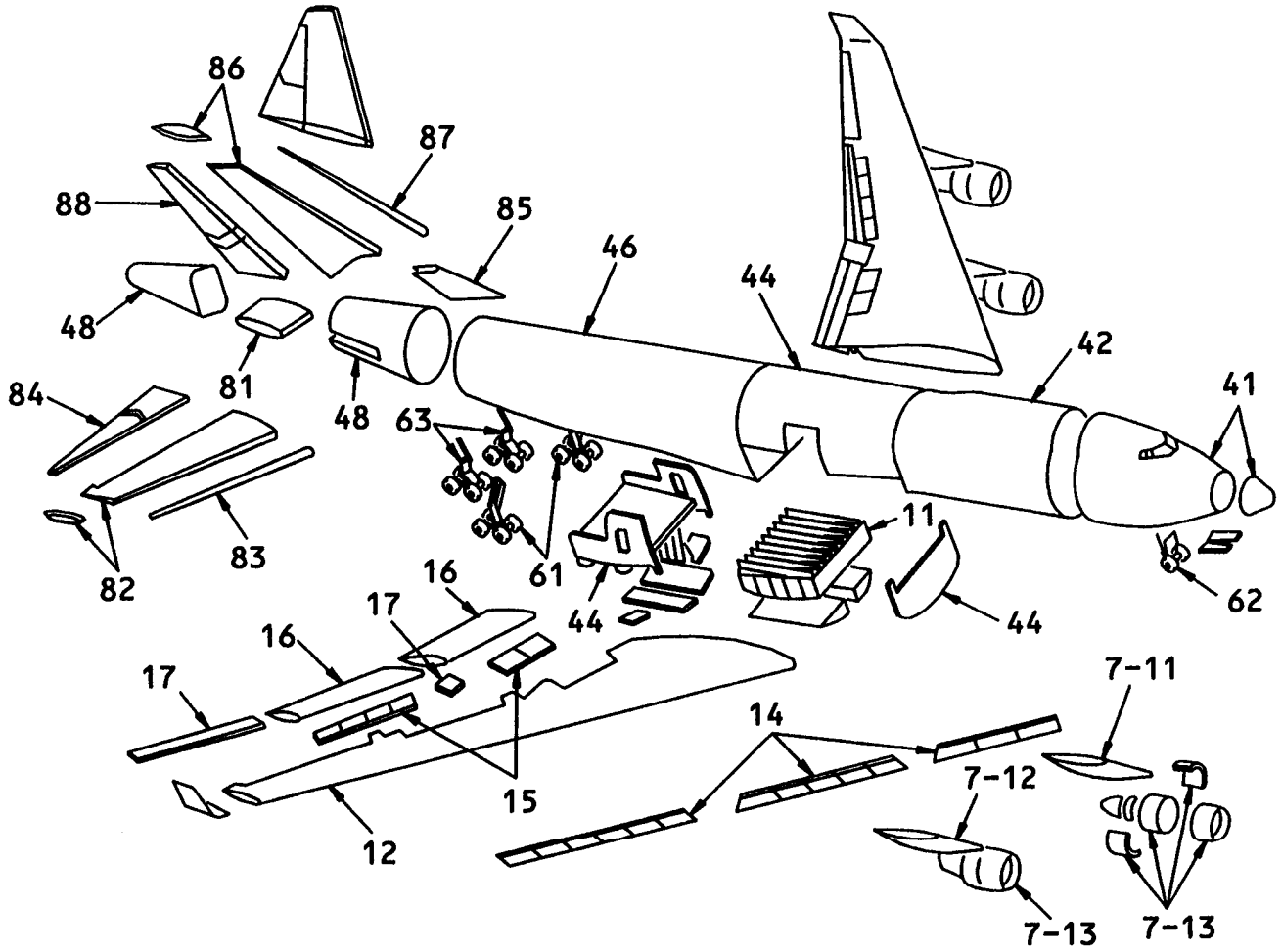


PLAN VIEW DIMENSIONS

AIRPLANE SECTION NUMBERS

To aid in the identification of numerous airplane parts and systems the airplane is divided into sections. These sections are numbered as:

- 11: wing stub
- 12: wing
- 14: wing leading edge
- 15: spoilers
- 16: flaps
- 17: ailerons
- 41: body section - nose
- 42: body section - forward
- 44: body section - center
- 46: body section - aft
- 48: body section - tail
- 61: main gear - wing
- 62: nose gear
- 63: main gear - body
- 81: horizontal stabilizer center section
- 82: horizontal stabilizer
- 83: horizontal stabilizer leading edge
- 84: elevators
- 85: fin - dorsal
- 86: vertical stabilizer - (fin)
- 87: vertical stabilizer - leading edge
- 88: rudder
- 7-11: strut - inboard
- 7-12: strut - outboard
- 7-13: power plant



AIRPLANE SECTION NUMBERS