# Aircraft Maintenance - the practical approach

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This document describes all necessary ingredients needed to start or optimize an aircraft maintenance organization.
It will discuss :
- the Introduction to aircraft maintenance
- the organization breakdown
- the maintenance program based upon the updated MSG-3 analysis
- the planning of aircraft maintenance
- the Operation center
- the maintenance capacity & capability
- the material management
- the maintenance costs
- the reliability program
- the legislation of the EASA and foreign civil aviation authorities
- the highlights of the EASA Part-145 .

This document is therefore of interest to students and those who like to know more about the organization of aircraft maintenance

# Aircraft Maintenance
## the practical approach

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**PREAMBLE:**

The author has been working for 34 years in aircraft maintenance, of which are 2 years in the military services and the rest in the commercial aviation business.
He was an inspector for the Dutch Aviation Authorities directly involved in the manufacturing of the Fokker aircraft, such as Fokker F-27, F-28.
He was an after sales service engineer at Fokker's, where he was involved in the development of an updated maintenance program for the Fokker F-28 as well as maintenance advices for the operators to perform efficient maintenance and bring back fuel consumption.
He was working in an operators maintenance facility as head of engineering, material management and maintenance planning and for the last 12 years as head of the maintenance training department.
During his work he experienced that there was barley knowledge about why and how aircraft maintenance should be done in the most effective and efficient way. This was the trigger to write such a document, which was sponsored by the Amsterdam Technical Academy, resulting in various guest lecture's for students.

This document, issue 2, is an update for issue 1 of 1995.

So why such a document?
As explained in issue 1 no proper overview is available for the all aspects involved in aircraft maintenance. Of course there is enough information about every detail discussed in this document, but are too profound.

Issue 2 has been created because of new developments and updates in the aircraft maintenance environment.

So this document has been created to provide an inside information for both students and staff within aircraft maintenance organizations.

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## 0. ISSUE OF EDITION NR.2

The edition nr. 2 was necessary to update the whole document to the present situation and it is therefore that some chapters have been deleted, such as the description of maintenance manuals, because almost every maintenance document is nowadays to be found on the internet at the manufacturer's website or other websites.

Another item of importance in this document is the addition of the specific legislation for this kind of business.

## 1. INTRODUCTION.

Effective aircraft maintenance has become an issue of vital significance to the smooth running of airline operations. Fleet levels are still exceeding existing in-house capacity at more and more locations and airlines are facing the extra burden of mandatory modifications of older aircraft or extra maintenance tasks ordered by the authorities based on the outcome of accident analyses (e.g. Fuel tank safety). Another worry for the maintenance organizations is the shortage of skilled personnel.

All of these factors are conspiring to place unprecedented demands on engineering divisions worldwide. In order to overcome such problems, operators will have to realistically quantify their capabilities and make decisions on which aircraft should continue to be maintained in-house and which should be send to third parties.

In order to make a contribution to these subjects we created a document and in this document we will follow a line, describing how an airline maintenance facility is set up and what kind of management tools can be used or have to be used in order to get the aircraft the most efficient maintenance.

We start with some historical developments about why maintenance and in particular preventive maintenance is required.

Chapter 2, will tell us about an example how an airline maintenance organization is set up and which supporting departments are involved.

Chapter 3 explains how an aircraft maintenance program will be established, where one of the most recent and important developments in aircraft maintenance will be discussed called "Aircraft Aging problems".

Chapter 4, an efficient aircraft maintenance cannot be done without proper planning and the relating documents, some examples will be discussed as well.

Chapter 5, a coordination department within the aircraft maintenance is the Maintenance Operations Centre, who will follow all aircraft in the fleet to keep track of the planned inspection times as well as aircraft flying with technical problems or are grounded because of a technical malfunction.

Chapter 6, besides the earlier mentioned aspects for an efficient maintenance it is also of vital importance to have a very good view of the maintenance capacity and the capability.