

MANUAL FOR RECOGNITION OF AIRLINER

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All aircrafts have some common features at first sight. They have a fuselage, engines and stabilizing surfaces, tail, landing gear etc. Despite this fact, they still differ from each other. Types and mutual arrangement of these elements all together make an aircraft. However I have not found in any literature the exact manual how to identify an aircraft, I decided to choose this topic and create a manual for recogniton of airliner on my own. This makes the base for my work.

K e y w o r d s: Airliner, manual for recognition , low-wing airplane , middle range airliner , long range airliner

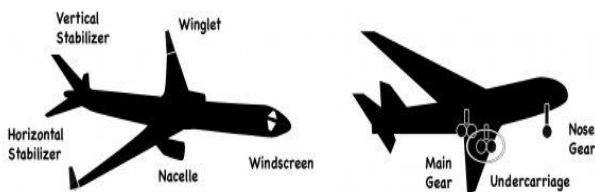
1 INTRODUCTION

Creating a manual for recognizing airliners for medium and long distance is the main point of my thesis. Recently there is no specific way for inexperienced user to distinguish these planes. We can identify correctly these airliners by following specific steps contained in this tutorial and recognize them once for all. These steps are divided in two parts. Firstly, there is a way for distinguishing planes and their main attributes. Moreover, correct identification of an airline and a tutorial for this identification is added. Secondly, we can find there data about each plane with technical description, a photography and a 3-view.

2 MAIN PARTS OF AIRCRAFT

It is quite difficult to identify transport aircrafts for an unexperienced observer. It is obvious that aircrafts on medium and long distances have similar concept works, but we can not say that they are exactly the same. Each type of an aircraft, such as Boeing 737, is made in 11 versions. For a correct identification of a particular type of an aircraft it is required to have at least some information such as number of passengers who can travel by each plane or the information about the length of the fuselage. The correct identification of an aircraft is then possible only with the knowledge about the number of passenger windows, because all the planes have the same desing, but they have a different length of the fuselage. However, if we are not pilots or mechanics who are struggling with it every day, we just need to know how to distinguish Boeing B737 from the Airbus A320.

We can see the main parts of an aircraft on this picture, based on which we will identify the types of transport aircraft:



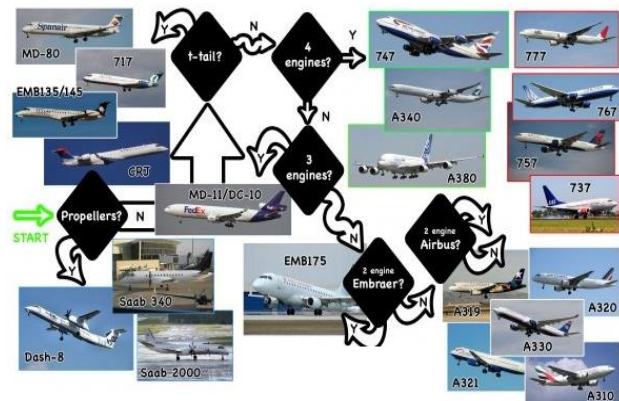
Main parts of an aircraft for recognition

Manual for recognizing aircrafts by external visual shapes and characters, according to the following specific steps:

- type of engines
- the number of engines and their location
- location, shape of wings and wiglets
- the shape of the tail surfaces location
- type of gear and the number of wheels
- shape and number of windows in cockpit
- number of windows on the sides of fuselage
- by the number of emergency exits - especially by various types of aircrafts

3 PROCEDURE FOR RECOGNITION OF AIRLINER

There is a guide how to proceed in identifying transport aircraft which I illustrated in the following figure:



Steps for aircraft identification

A visual identification of the aircraft according to this picture divides planes into 5 groups. A brief overview of the identifying steps is:

1. Has the aircraft a propellers ?
2. If not, does it have a T-tail ?
3. If not, has the aircraft 4 engines?
4. If not, has it 3 engines?
5. If not, has it 2 engines? If it has two engines, is it the type Embraer, Boeing or Airbus?

1. Does it have propellers? However, a few prop planes persist, usually servicing short regional hops. If your plane has propellers, chances are it's either a Dash-8 or a Saab.

2. Does it have a T-Tail? You have reached this step because plane you see does not have propellers. The next major division is between t-tails and not-t-tails. As the name implies, the t-tail has a tail shaped like the letter "T". If your plane has T-tail, chances are it's either a B717, Embraer 135/145, Fokker100 or MD-80.

3. Four Engines? If you have reached this step, it is because (1) your plane does not have propellers and (2) your plane is not a t-tail. Also, there are engines under the wings. If there are four engines (two on each side), identification is pretty straightforward. It should be only Boeing 747, Airbus A340, A380 and Il-96.

4. Three Engines? If there's an engine under each wing and a third one in the tail. This concept is not preferred this time and it's include a few airplanes: MD11, DC-10 and Lockheed L-1011 TriStar.

5. Two Engines? If it has two engines, is it the type Embraer, Boeing or Airbus? The most popular category (two engines) is where things get confusing, because this is a common configuration and there's so many possibilities to choose from. It's either an Embraer 170/175/190, an Airbus 300 series, or a Boeing 7x7 (where x = 3, 5, 6 or 7).

Windscreen = four windows or six? The easiest way to identify a two-engine jet as an Embraer is to count the number of windows in the windscreen. Four windows = Embraer. Six or more windows = Airbus or Boeing. And if it's an Embraer, it's either a 170, 175 or a 190. If the windscreen has six windows, it's either a Boeing or an Airbus.

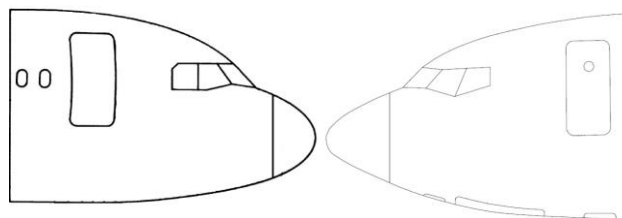
4. VISUAL COMPETITION BETWEEN BOEING AND AIRBUS

First step of recognition between Boeing and Airbus is look at the windscreen. On a Boeing, windows #1 and #6 are parallelograms, with the leading edge larger than the trailing edge. On an Airbus, windows #1 and #6 are rectangular but the rear upper corner is "clipped off."



Number and shape of windows

Next step for identification Boeing from Airbus is shape of nose. Boeing have more pointed noses while Airbus have bulbous, curved noses.



Airbus and Boeing -shape of nose

Shape of winglets is next difference between these airplanes. Winglets all work in the same basic way, but they don't all look the same. In essence, winglets reduce drag by recovering some of the energy in the wingtip vortex.



Airbus and Boeing -shape of winglet

5 CONCLUSION

After a long investigation and finding a suitable procedure I have managed to create a manual which is not an universal guide for recognition of all types of aircrafts, but especially for middle-range and long-range aircraft. However, it may form the basis for more detailed identification of the methodology and faster visual identification of aircraft in the future.

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