

Aircraft Knowledge

Aircraft Description

ICAO Doc 8643 provides data on aircraft such as the Manufacturer, Model, Type designator, etc. One of the items is called **Description** and is a three-symbol code containing basic data about the aircraft:

- The first symbol describes the aircraft type:
 - **L** - Landplane, e.g. [A320](#). Note: A floatplane, which can temporarily be converted to a landplane or vice versa, is described as a landplane and not a seaplane or amphibian in ICAO Doc 8643.
 - **S** - Seaplane, e.g. HARBIN SH-5 (ICAO designator SH5)
 - **A** - Amphibian, e.g. [LA4](#)
 - **G** - Gyrocopter, e.g. [A002](#)
 - **H** - Helicopter, e.g. [A109](#)
 - **T** - Tiltrotor, e.g. [V22](#)
- The second symbol specifies the number of engines 1, 2, 3, 4, 6, 8 or C, where **C** means that two engines are coupled to drive a single propeller system (e.g. [C08T](#)). The **C** symbol is only used for **fixed-wing** aircraft.
- The third symbol specifies the engine type:
 - **J** - jet
 - **T** - turboprop/turboshaft
 - **P** - piston
 - **E** - electric
 - **R** - rocket

Examples

- **L2J** - a landplane with two jet engines
- **H2T** - a helicopter with two turboprop/turboshaft engines
- **S1P** - a seaplane with one piston engine

ICAO Aerodrome Reference Code

The [ICAO](#) Aerodrome Reference Code is a two part categorisation of aircraft types which simplifies the process of establishing whether a particular aircraft is able to use a particular aerodrome. It is included in ICAO Annex 14. It has two 'elements', the first is a numeric code based on the Reference Field Length for which there are four categories and the second is letter code based on a

combination of aircraft wingspan and outer main gear wheel span.

Element 1 of the Code is as follows:

Code number	Aeroplane reference field length	Typical aeroplane
1	< 800 m	DE HAVILLAND CANADA DHC-6/PIPER PA-31
2	800 m but < 1200 m	ATR ATR-42-300/320/BOMBARDIER Dash 8 Q300
3	1200 m but < 1800 m	SAAB 340/BOMBARDIER Regional Jet CRJ-200
4	1800 m and above	BOEING 737-700/AIRBUS A-320

Field length means the balanced field length (which is when the take-off distance required is equal to the accelerate-stop distance required) if applicable, or take-off distance in other cases. Aeroplane reference field length is defined as "the minimum field length required for take-off at maximum certificated take-off mass, at sea level, in [International Standard Atmosphere](#) conditions in still air and with zero runway slope as documented in the [Aircraft Flight Manual \(AFM\)](#) or equivalent document.

Element 2 of the Code is derived from the most restrictive of either the aircraft wingspan or the aircraft outer main gear wheel span. The categories are as follows:

Code letter	Wingspan	Typical aeroplane
A	< 15 m	PIPER PA-31/CESSNA 404 Titan
B	15 m but < 24 m	BOMBARDIER Regional Jet CRJ-200/DE HAVILLAND CANADA DHC-6
C	24 m but < 36 m	BOEING 737-700/AIRBUS A-320/EMBRAER ERJ 190-100
D	36 m but < 52 m	B767 Series/AIRBUS A-310
E	52 m but < 65 m	B777 Series/B787 Series/A330 Family
F	65 m but < 80 m	BOEING 747-8/AIRBUS A-380-800

It should be noted that Element 2 is often used on its own since it has direct relevance to detailed airport design. It also has a parallel but differently defined code use by the FAA, the [Airplane Design Group \(ADG\)](#)

Wake Turbulence Category

The [ICAO](#) wake turbulence category (WTC) is entered in the appropriate single character wake turbulence category indicator in Item 9 of the ICAO model flight plan form and is based on the maximum certificated take-off mass, as follows:

- **J** (Super) aircraft types specified as such in Doc 8643 (Aircraft type designators). At present, the only such type is the Airbus [A380-800](#) with a maximum take-off mass in the order of 560 000 kg. (see [Airbus A380 Wake Vortex Guidance](#))
- **H** (Heavy) aircraft types of 136 000 kg (300 000 lb) or more (except those specified as **J**);
- **M** (Medium) aircraft types less than 136 000 kg (300 000 lb) and more than 7 000 kg (15 500 lb); and
- **L** (Light) aircraft types of 7 000 kg (15 500 lb) or less.

Variants of an aircraft type may fall into different wake turbulence categories, (e.g. L/M or M/H). In these cases, it is the responsibility of the pilot or operator to enter the appropriate wake turbulence category indicator in the flight plan.

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