

INTERNATIONAL STANDARD FOR ENGINE MAKE, MODEL, AND SUBMODEL GROUPINGS

BUSINESS RULES

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The purpose of this paper is to provide a brief set of key definitions to be used in providing an international data standard for uniquely identifying groupings of aircraft engines.



RECORD OF REVISIONS

Date	Version	Section	Revision
7/2011	1.0.2	Document	Reformatted Document
7/2011	1.0.2	Title Page	Removed “Proposed” from title
7/2011	1.0.2	Executive Overview	Replaces co-chair contact information with: Contact point for all CICTT work: CICTT@intlaviationstandards.org
2/2006	1.0.1	Executive Overview	Replaces the ICAO co-chair with Yuri Fattah
2/2006	1.0.1	3.6 Aircraft Engine Submodel	In the tables of examples, replaces PRATT AND WHITNEY–PW6124–NO SERIES SUBMODEL with PRATT AND WHITNEY–PW6124–NO SUBMODEL EXISTS



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1 EXECUTIVE SUMMARY

The International Civil Aviation Organisation (ICAO) and the Commercial Aviation Safety Team (CAST), which includes Government officials and aviation industry leaders, have jointly chartered the CAST/ICAO Common Taxonomy Team (CICTT). CICTT includes experts from several air carriers, aircraft manufacturers, engine manufacturers, pilot associations, regulatory authorities, transportation safety boards, ICAO, and members from Canada, the European Union, France, Italy, Japan, the Netherlands, the United Kingdom, and the United States. The CICTT is chaired by a representative from ICAO and CAST.

The team is charged with developing common taxonomies and definitions for aviation accident and incident reporting systems. Common taxonomies and definitions establish a standard industry language thereby improving the quality of information and communication. With this common language the aviation community's capacity to focus on common safety issues is greatly enhanced.

To accomplish its objectives, CICTT plans the development of the following common taxonomies and definitions in the following categories: Phase of Flight; Occurrence Categories; Aircraft Make/Model/Series tables; and Engine Make/Model/Submodel tables.

Many aviation organisations use the terms Make/Model/Submodel to identify or group aircraft engines and some organisations use different terms. The CICTT acknowledges that the use of Make/Model/Submodel will change the terminology used by some organisations; however, the CICTT requests that aviation organisations adopt standard terminology throughout the aviation industry.

The systems in which aircraft engines are identified or grouped with similar aircraft engines vary. National civil aviation authorities (NCAAs) register aircraft. These aircraft registries also list the associated aircraft engine. NCAAs also collect airworthiness data related to aircraft engine service difficulties. Aircraft accident investigators identify aircraft engines involved in aircraft accidents. The aircraft engine identification system used by an aircraft accident investigation organisation is not necessarily the same as the aircraft engine identification system used by that country's NCAA. This has resulted in same information being identified or referenced in different ways, thereby inhibiting organisations' abilities to share common and critical information.

It is understood that recognizing aircraft engines by grouping key identification characteristics, such as aircraft engine make, model, submodel, or category (for example, turbine), assists in the air traffic control, aircraft registration, aircraft engine certification, accident and incident investigation, safety analysis, and other functions. Establishing a standard nomenclature facilitates efficient and effective communications throughout the industry and throughout the world.



Additionally, uniform standard aircraft engine groupings and individual aircraft engine identifiers will:

- Overcome difficulties in merging data from diverse information systems (for example, international and domestic sources or public and private sources).
- Reduce costs to merge and transform aircraft engine data.
- Enlarge the range and depth of aircraft engine information available for analysis.
- Reduce duplicate or multiple identifiers for the same aircraft engine, which increases the integrity of information available.
- Establish more useful and meaningful data that is defined and managed consistently.

It is important to note that CICTT does not expect governments, international organisations, and corporations to immediately change existing data systems or existing definitions. The intent is to provide “target” taxonomies and definitions so that as organisations make plans for, and implement new safety systems, these new taxonomies and definitions are adopted.

The purpose of this paper is to provide a brief set of key definitions to be used in providing an international data standard for uniquely identifying groupings of aircraft engines. An aircraft engine grouping includes those groupings of aircraft engines by one manufacturer, an aircraft engine model, an aircraft engine submodel, or aircraft engine type certificate. This document is supplemented by technical documents further elaborating on the design of the system to support this international data standard.

This document contains the results of the CICTT regarding common taxonomies and definition of Engine Make/Model/Submodel. The aircraft engine sub-team is a subcommittee of the CICTT and is co-chaired by Diana Young of the U.S. Federal Aviation Administration (FAA) and Philip Champion-Demers of Transport Canada with the support of Deborah Kane from the FAA. Additional organisations involved in the sub-team include; Bureau d’Enquêtes et d’Analyses pour la Sécurité de l’Aviation Civile of France; General Aviation Manufacturers Association; Transport Canada; the Transportation Safety Board of Canada, and the U.K. Civil Aviation Authority.

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2 SCOPE

The CICTT decided to expand the aircraft make, model, and series groupings by establishing an international standard for aircraft engine make, model, and submodel groupings. The CICTT adds aircraft engines that could be installed on the aircraft in the CICTT list. The CICTT adds new aircraft engine valid values as information is provided or researches aircraft engine valid values with the following priority:

1. Aircraft engines that could be installed on large civilian airplanes/helicopters,
2. Aircraft engines that could be installed on small civilian airplanes/helicopters,
3. Aircraft engines that could be installed on military aircraft that have a civilian equivalent,
4. Aircraft engines that could be installed on powered gliders in current use,
5. Aircraft engines that could be installed on airships in current use,
6. Aircraft engines that could be installed on military airplanes/helicopters in current use (ICAO aircraft type designators),
7. Aircraft engines that could be installed on gyroplanes in current use,
8. Aircraft engines that could be installed on military airplanes/helicopters,
9. Aircraft engines that could be installed on other aircraft in current aircraft safety database(s), and
10. Aircraft engines that could be installed on ultralights/microlights.



3 DATA ELEMENTS—AIRCRAFT ENGINE

3.1 AIRCRAFT ENGINE

An aircraft engine is a primary propulsion unit, which is manufactured for installation in an aircraft.

3.2 AIRCRAFT ENGINE MANUFACTURER

An aircraft engine manufacturer is the organization that has been recognized by its certifying authority as having manufactured the engine, at the time of completion.

- An aircraft engine manufacturer designation of a specific engine entry is not superseded by any changes in the engine manufacturer's name (For example the engine manufacturer of those AE3007 engines that were built before 1995 remains ALLISON; those AE3007 engines built after 1995 is ROLLS ROYCE).
- An Aircraft Engine model can be manufactured by more than one Engine Manufacturer (For example the PT6A was built by PRATT AND WHITNEY in the United States and PRATT AND WHITNEY CANADA in Canada. The Engine Manufacturer permissible value is either PRATT AND WHITNEY or PRATT AND WHITNEY CANADA, depending on which organization built the engine).

3.3 AIRCRAFT ENGINE MAKE

The aircraft engine make is name assigned to the engine by the engine manufacturer when each engine was produced. In most cases engine make is the organisation common name of the engine manufacturer. If the organisation that holds rights to an engine design permits another organisation to build that engine, in most cases the engine make would be the engine name assigned by the organisation that holds rights to an engine design.

Examples:

Organisation Common Name of the Engine Manufacturer	Aircraft Engine Make
ROLLS ROYCE	ALLISON
ALLISON	ALLISON
TELEDYNE CONTINENTAL	CONTINENTAL
PRATT AND WHITNEY	PRATT AND WHITNEY
PRATT AND WHITNEY CANADA	PRATT AND WHITNEY

3.4 AIRCRAFT ENGINE FAMILY

An engine model is an engine manufacturer's similar design.

- The engine model is contained within the engine type certificate, or equivalent documentation (An engine type certificate may contain more than one engine model).
- The engine model must contain a space between separate terms or words (for example, use "TWIN WASP", not "TWINWASP" or use "RB211 524G", not RB211524G").
- The engine model must not contain a space as a separator between alphabetic and numeric characters (for example, "JT3D", not "JT 3 D").
- The engine model must not contain a dash (-), slash (/), or other special character.
- The engine model when concatenated with the engine make must be unique in order to identify that engine grouping.

Examples:

Make	Model
ALLISON	250
CONTINENTAL	O300
TURBOMECA	ARRIEL1

3.6 AIRCRAFT ENGINE SUBMODEL

An engine submodel is an engine manufacturer's designation of an engine model grouping.

- The engine submodel is contained within the engine type certificate, or equivalent documentation (An engine type certificate may contain more than one engine model and submodel).
- The engine submodel usually reflects the lowest level description of an engine without uniquely identifying one engine (For example, the CONTINENTAL–O300–D cannot be described at a lower level without uniquely identifying that engine).
- Where an engine model has no series designation, for example PRATT AND WHITNEY–PW2643, the submodel will have the value “NO SUBMODEL EXISTS.”
- Where one submodel of an engine model, typically the earliest one, is known by the model designation (for example, PRATT AND WHITNEY–PW2037), the submodel has the value “UNDESIGNATED SUBMODEL” provided that the engine model also has other submodel designators, for example PRATT AND WHITNEY–PW2037–M, et al.
- If an engine model has the submodel “NO SUBMODEL EXISTS” and the engine manufacturer subsequently produces an engine submodel for the same engine model, the submodel is replaced with the value “UNDESIGNATED SUBMODEL.”
- The engine submodel must not contain a dash (-), slash (/), or other special character.
- The engine submodel must contain a space between separate terms or words (for example, use “NO SUBMODEL EXISTS”, not “NOSUBMODELEXISTS”).
- The engine submodel must not contain a space as a separator between alphabetic and numeric characters (for example, use “12UA”, not “12 UA”).

Examples:

Make	Model	Submodel
ALLISON	250	C10A
CONTINENTAL	O300	A
CONTINENTAL	O300	B
CONTINENTAL	O300	C
CONTINENTAL	O300	D
PRATT AND WHITNEY	PW2037	UNDESIGNATED SUBMODEL
PRATT AND WHITNEY	PW2037	M
PRATT AND WHITNEY	PW6124	NO SERIES SUBMODEL
PRATT AND WHITNEY	WASP JUNIOR	A
PRATT AND WHITNEY	WASP JUNIOR	B4

3.7 ENGINE CATEGORY

An engine category is the means by which engines are grouped based on how the engine produces power.

Valid Values:

RECIPROCATING

ROTARY

TURBINE

OTHER

- A RECIPROCATING engine is an internal combustion engine in which the reciprocating (back and forth) motion of one or more pistons within their cylinder(s) due to combustion is converted either to the rotation of a crankshaft or to the rotation of the cylinders about a stationary crankshaft. Reciprocating engines operate with intermittent combustion.
- A ROTARY engine is an internal combustion engine in which the combustion is contained in a chamber formed by part of the housing and sealed in by one face of the rotor(s) working upon a crankshaft or other device to create rotational movement. Rotary engines operate with intermittent combustion. A rotary engine is also known as a Wankel engine.
- A TURBINE engine is an internal combustion engine in which gases from the combustion chamber(s) drive the blades of a turbine to create rotational motion. A turbine engine operates with continuous combustion.
- OTHER refers to an engine that is not a reciprocating, rotary, or turbine engine.

3.8 ENGINE SUB CATEGORY

An engine sub category is the means by which an engine category is subdivided based on similar design characteristics.

Valid Values:

TURBOJET
TURBOFAN
TURBOPROP
TURBOSHAFT

- A TURBOJET engine is designed to create all of its propulsion from exhaust gases. A Turbojet is a subcategory of the Turbine Engine category.
- A TURBOFAN engine is designed to create all of its propulsion from a combination of exhaust gases and air that bypasses the combustion process and is accelerated in a ducted space between the inner (core) engine case and the outer engine fan casing. A Turbofan Engine is a subcategory of the Turbine Engine category.
- A TURBOPROP engine is designed to create most of its propulsion from a propeller driven by a turbine, usually through a gearbox. A Turboprop Engine is a subcategory of the Turbine Engine category.
- A TURBOSHAFT engine is designed to drive a rotor transmission system. A Turboshaft Engine is a subcategory of the Turbine Engine category.

Valid combinations of Engine Category and Engine Sub-Category:

Engine Category	Engine Sub Category
TURBINE	TURBOJET
TURBINE	TURBOSHAFT
TURBINE	TURBOFAN
TURBINE	TURBOPROP
RECIPROCATING	NOT APPLICABLE
ROTARY	NOT APPLICABLE
OTHER	NOT APPLICABLE

3.9 TYPE CERTIFICATE

The type certificate is the document issued by the certifying authority to the organization that holds design responsibility. The type certificate may cover one or more groupings of aeronautical products having similar design, performance, and safety characteristics.

- A type certificate and its associated data sheets detail the type design, basis of certification, and applicable standards and limitations of an aeronautical product, as specified by the certifying authority.
- The type certificate recorded is the document issued by the certifying authority to the organization that currently holds design responsibility.
- If a certifying authority did not issue a type certificate for an aeronautical product, the permissible value is the equivalent document issued by the certifying authority. For example AIRWORTHINESS NOTICE 26 and BCAR AR-1 are the value to those aeronautical products under the design responsibility of the United Kingdom that do not have a type certificate.
- The term “NOT IDENTIFIED” is the value if a type certificate exists for the aeronautical product but is not currently included in the list of permissible values.
- The term “NOT CERTIFICATED” is the value if a type certificate or similar document does not exist for the aeronautical product.
- If a type certificate is issued by the European Aviation Safety Agency (EASA), the country name of the certifying authority is EUROPEAN UNION.
- If responsibility for design is transferred from one certifying authority to another certifying authority, the TYPE CERTIFICATE and COUNTRY OF CERTIFYING AUTHORITY are updated to reflect the transfer (For example, the design responsibility for specific helicopters was transferred from Bell Helicopter Textron and the Federal Aviation Administration to Bell Helicopter Textron Canada and Transport Canada. In this circumstance the type certificate value changed from H9SW to H-88 and the country of certifying authority value changed from the United States to Canada).

Examples:

Type Certificate Identifier	Country Of Certifying Authority
E32	CANADA
E.012	EUROPEAN UNION
1E8	UNITED STATES
ATC 14	UNITED STATES
M17	FRANCE



3.10 AERONAUTICAL PRODUCT

An aeronautical product is an aircraft, aircraft engine, a propeller, or appliance.

3.11 COUNTRY OF CERTIFYING AUTHORITY

The country of certifying authority is the official name of a country or sovereignty; or regional association of two or more countries that issues type certificates.

- If responsibility for design is transferred from one certifying authority to another certifying authority, the TYPE CERTIFICATE and COUNTRY OF CERTIFYING AUTHORITY are updated to reflect the transfer (For example, the design responsibility for specific helicopters was transferred from Bell Helicopter Textron and the Federal Aviation Administration to Bell Helicopter Textron Canada and Transport Canada. In this circumstance the type certificate value changed from H9SW to H-88 and the country of certifying authority value changed from the United States to Canada).
- An example of a regional association is the EUROPEAN UNION.
- If the type certificate value is NOT IDENTIFIED or NOT CERTIFICATED the value of the country of certifying authority is NOT APPLICABLE.

3.12 BEGIN DATE

The date a specific valid value started in use.

- If only the year is known default to the first day of that year.
- If only the month and year is known, default to the first day of the month.
- The value must be a valid date.
- The date is recorded as YearMonthDay.

3.13 END DATE

The date a specific valid value ceased to be in use.

- If only the year is known this field, default to the last day of that year.
- If only the month and year is known, default to the last day of the month.
- If present, the value must be a valid date.
- The date is recorded as YearMonthDay.



4 DATA ELEMENTS—ORGANISATION

4.1 ORGANISATION

An organisation is a public or private entity and includes National Civil Aviation Authorities (NCAAs), engine manufacturers, and production facilities, maintenance facilities, and training facilities.

- An organisation may be an entity (for example, subsidiary or division) of another organisation. This is often the case if the parent company is a formal business entity involved in the aviation industry. For example, Pratt And Whitney Aircraft is the engine-manufacturing subsidiary of United Technologies Corp.
- An organisation may be a consortium of multiple organisations.
- An organisation may be the name of a formal joint venture (for example, CFM Incorporated).
- If no organisation start date is known, this field will default to 1901/01/01.

4.2 ORGANISATION FULL NAME

The organisation full name is the entire official or legal name of the organisation.

- The organisation full name associated with a unique organisation common name will normally be the most recent full name for that organisation.

Examples:

Pratt & Whitney Aircraft

CFM International, S.A.

4.3 ORGANISATION COMMON NAME

The organisation common name is the abbreviated or shortened name to which an organisation is referred. For example the organisation common name for PRATT & WHITNEY DIVISION is PRATT AND WHITNEY.

- An organisation common name may contain a space (for example, ROLLS ROYCE).
- An organisation common name must not contain a dash (-), slash (/), or other special character.
- An organisation common name is the most succinct name possible that clearly defines an organisation and is usually the one to two words of the Organisation Full Name.
- The organisation common name does not change simply because the organisation has changed its full name if the aviation line of business within that organisation has not changed.
- The organisation common name only changes if an organisation undergoes a significant change (such as a merger with another manufacturer, the takeover of a manufacturer, a change in country location).

Examples:

ROLLS ROYCE	PRATT AND WHITNEY
CONTINENTAL	GENERAL ELECTRIC

4.4 ORGANISATION ACRONYM

The organisation acronym consists of the first letters of the components of the organisation. Examples of acronyms are PW for Pratt & Whitney Aircraft and BSEL for Bristol Siddeley Engines Ltd.

Examples:

BSEL	PW	RR
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4.5 ORGANISATION ROLE

An organisation role type distinguishes the function an organisation performs in regard to the aviation industry.

Examples:

AIRCRAFT MANUFACTURER

ENGINE MANUFACTURER

KIT PRODUCER

- An AIRCRAFT MANUFACTURER is the organisation that has been recognized by its certifying authority as having manufactured the aircraft, at the time of completion.
- An ENGINE MANUFACTURER is the organisation that has been recognized by its certifying authority as having manufactured the engine, at the time of completion.
- A KIT PRODUCER is the organisation that produces kits for amateur construction.

4.6 COUNTRY

The country is the official name of a country or sovereignty.

- If the organisation is a legal entity when the country in which the organisation is located changes its name, the COUNTRY will be modified to indicate the new country name. For example, when Aero Vodochody began it was located in Czechoslovakia. The country for Aero Vodochody is now Czech Republic, the current name of the country where Aero Vodochody is located.
- If the organisation is no longer a legal entity when the country in which the organisation was located changes its name, the COUNTRY will not be modified to indicate the new country name.
- The International Organisation for Standardisation (ISO 3166), Official Country Codes, is the official source for a country name.