INTERNATIONAL STANDARD ISO 2529

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Aircraft — Zones, access doors and panels — Referencing system

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FOREWORD

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Draft International Standards adopted by the Technical Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 2529 was drawn up by Technical Committee ISO/TC 20, *Aircraft and space vehicles,* and circulated to the Member Bodies in October 1971.

It has been approved by the Member Bodies of the following countries :

Austria	Italy	Thailand
Belgium	Japan	Turkey
Czechoslovakia	Netherlands	United Kingdom
Egypt, Arab Rep. of	South Africa, Rep. of	U.S.A.
India	Spain	U.S.S.R.

The Member Bodies of the following countries expressed disapproval of the document on technical grounds :

France
Germany

Printed in Switzerland

Aircraft — Zones, access doors and panels — Referencing system

1 SCOPE AND FIELD OF APPLICATION

This International Standard states the principles to be adopted in preparing a zone referencing system for aircraft and describes the method of referencing access doors and panels.

Its purpose is to facilitate maintenance planning, preparation of job cards and location of work areas and components, and to provide a common basis for various tasks.

2 ZONE REFERENCING SYSTEM

2.1 Zoning

2.1.1 *Major zones*

The aircraft shall be divided into the following major zones, which shall be designated by the standard series numbers stated.

Major zone	No.
Lower half of fuselage to rear pressure bulkhead (i.e. area below main cabin deck, including floor structure)	100
Upper half of fuselage to rear pressure bulkhead (i.e. area above main cabin deck, including floor panels)	200
Empennage	300
Power plants, struts, nacelles and engine bays	400
Left wing	500
Right wing	600
Landing gear and landing gear doors	700
Doors (other than landing gear doors and maintenance access doors)	800

The special series No. 900 shall be reserved for special attachments to a basic aircraft which cannot be covered by the standard series numbers; for example, spare engine carriage kits, panniers fitted externally and helicopter pannier packs.

Examples of the division of some types of aircraft into major zones are shown in Figure 3.

NOTE — It is not necessary to use all the zone numbers for every type of aircraft.

2.1.2 *Sub-major zones and zones*

Major zones shall be divided into sub-major zones which shall be further divided into zones, in accordance with the principles stated in 2.2.

Each sub-major zone shall be designated by a number consisting of two digits and a zero (for example 110, 120, etc. in major zone 100) and each zone shall be designated by a number consisting of three digits (for example 111, 112, ..., 119 in sub-major zone 110). The system of numbering shall be in accordance with the principles stated in 2.3.

The figure zero shall not to be used in a zone number.

An example of the division of a major zone is given in Figure 4.

2.1.3 *Work locator*

The use, where required, of an additional numerical digit as a "work locator" is recommended, for example :

1. Top outside
2. Top inside
3. Bottom inside
4. Bottom outside

Examples of typical uses of the fourth digit are shown in Figure 1.

2.2 Principles of zoning

2.2.1 Whenever possible, the division of similar major zones (for example left and right wings) and similar sub-major zones (for example left and right tailplanes) shall be the same.

2.2.2 Whenever possible, sub-major zones and zones shall be defined by actual physical boundaries such as wing spars, major bulkheads, cabin floor, major partitions, control surface boundaries and the skin. Internal boundaries in the wing and fuselage are normally of greater value in establishing zone boundaries than are external boundaries such as skin joints.

2.2.3 In the fuselage, zone boundaries shall not split galleys, toilets or major equipment centres.

2.2.4 High manpower work areas, such as leading and trailing edges of wings, wheel wells, fuel tanks, accessory compartments and the cockpit, shall be suitably zoned to define the work area.

2.2.5 Major structural components, including passenger doors, cabin service doors, cargo doors, landing gears, landing gear doors, rudders, elevators, flaps, ailerons, slots, slats and leading edge devices, shall be treated as separate zones and designated by individual zone numbers.

2.2.6 The areas enclosed by the wing-to-fuselage fillets, the centre wing area within the fuselage and the area between the wing and the fuselage floor shall be treated as separate zones and designated by individual zone numbers in the 100 or 200 series, as appropriate.

2.2.7 Zone boundaries shall enclose related structures such as door jambs, i.e. a jamb for a specific door shall not be split by a zone boundary.

2.3 Principles of numbering

2.3.1 *General*

Except as stated in 2.3.2, the principles of numbering sub-major zones and zones shall be as follows :

1) FUSELAGE

Front to rear
Inboard to outboard
Vertically away from floor line

2) OTHER THAN FUSELAGE

Front to rear
Inboard to outboard
Root to tip

The principle in 1) is illustrated in Figure 2, which shows an exploded view of part of the lower half of the fuselage in an imaginary aircraft.

The principle in 2) is illustrated in Figure 4.

Corresponding sub-major zones and zones on the left and right sides shall be allotted numbers in which the second or third digits, as appropriate, are an odd number for the left side and the next even number for the right side. (See sub-major zones 330 and 340 and zones 311 and 312 in Figure 4.)

A zone straddling the centre line may be allotted an odd or even number.

If the fuselage cannot readily be divided into upper and lower halves, it shall be treated as a single entity under major zone 200.

Zone numbers shall be compatible with both passenger and cargo versions of an aircraft. However, for signifiant differences, such as a nose loading door or a large cabin cargo entry door, separate new zone numbers shall be allotted.

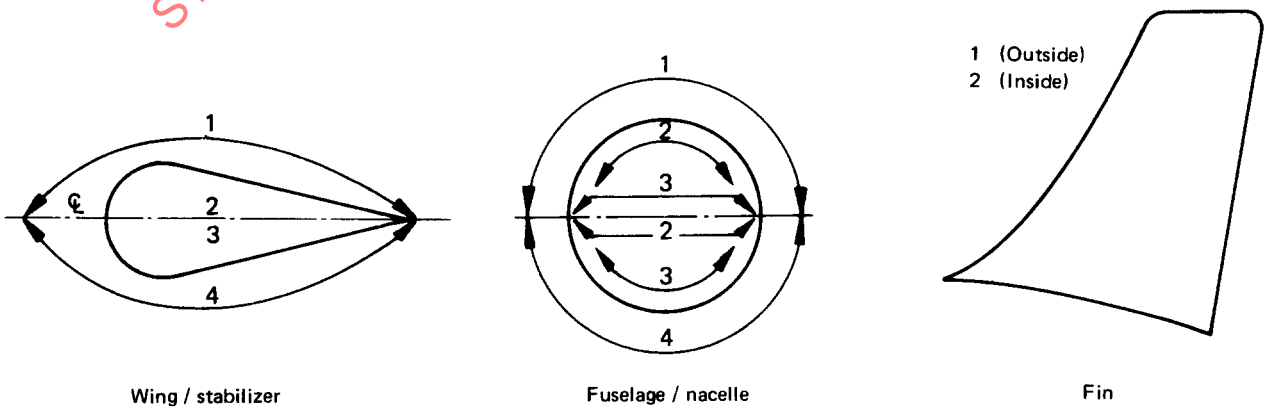


FIGURE 1 — **Examples of use of the fourth digit (work locator)**

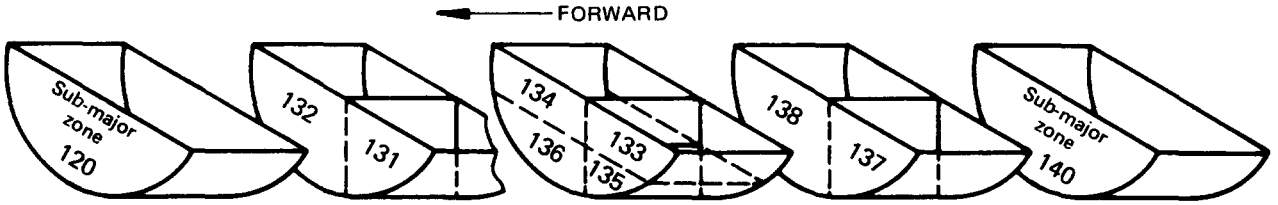


FIGURE 2 – **Example of fuselage zone numbering**

2.3.2 *Power plants*

The power plants shall be allotted sub-major zone numbers in sequence, starting with 410 for No. 1 power plant. The sequence of numbering shall be in accordance with ISO/R 482.[1)]

3 ACCESS DOOR AND PANEL DESIGNATION

3.1 General

Maintenance access doors, fillets, fairings and removable access panels (i.e. radio rack access, floors, cargo area and ceiling panels) shall be designated in accordance with 3.2.

Blow out doors and tank vents need not be designated in the same manner.

NOTE – Passenger doors, cabin service doors, cargo doors and landing gear doors are designated by individual zone numbers (see 2.2.5).

3.2 Method of designation

3.2.1 The designation shall be by the number of the zone in which the item is located and a single-letter or, if required, a two-letter suffix made up as follows :

1) *First letter.* The first letter designates the item in a logical sequence, in accordance with the principles stated in 2.3, starting with "A" in each zone.

2) *Second letter.* The second letter locates the item in relation to the zone, i.e.

T – Top

B – Bottom

P – Left-hand

E – Right-hand

X – Interior

The letters I and O shall not be used.

3.2.2 An item on the fuselage centre line shall be allotted the left-hand zone number.

3.2.3 When a door or panel is located on a larger door or panel, the larger item shall be lettered first.

3.2.4 When an item is located in more than one zone, it shall be allotted the lowest zone number involved.

3.2.5 Corresponding items on opposite sides of an aircraft shall have the same suffix even though the zone numbers will be different.

3.2.6 An item located on a zone boundary shall be allotted the number of the zone from which it is removed.

4 METHOD OF APPLICATION

The method of indicating combinations of zones, work locators and access panels on drawings and diagrams shall be as shown in the following examples :

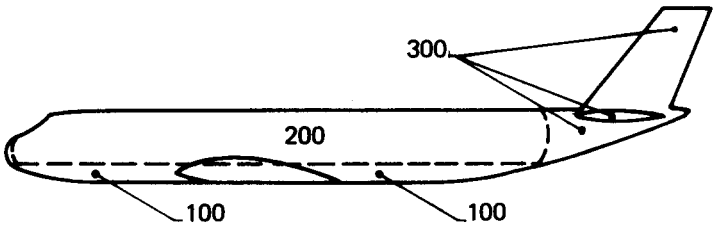
1) Combination of two zones (i.e. 311 and 312) 311 312

2) Zone and work locator 3112

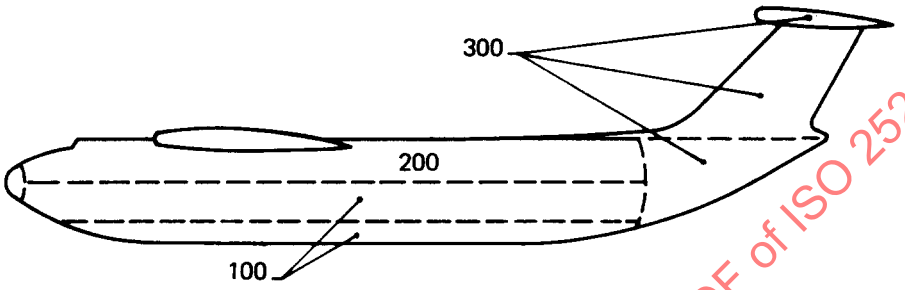
3) Zone and access panel 311A

4) Zone, work locator and access panel 3112A

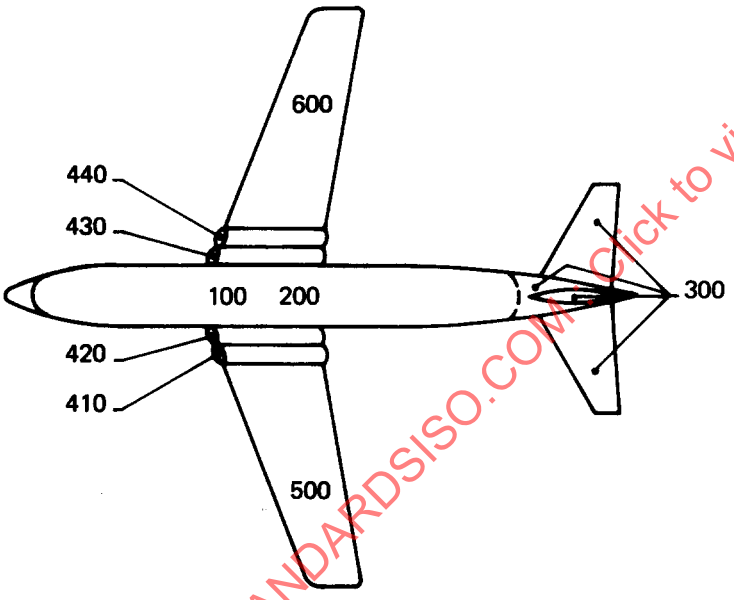
1) ISO/R 482, *Numbering of aircraft engines, engine cylinders and combustion chambers, and direction of rotation of engines and propellers.*



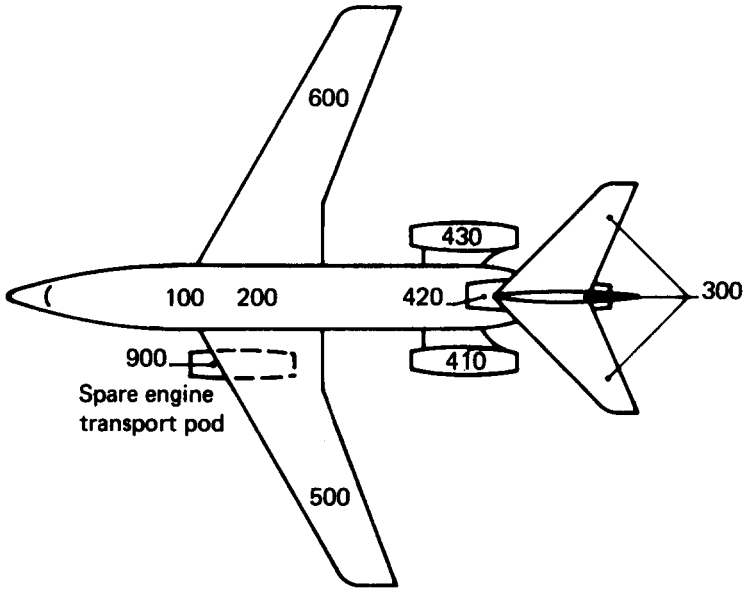
a) Basic fuselage aircraft



b) Double floor fuselage aircraft



c) Internal engined aircraft



d) Internal and external engined aircraft

FIGURE 3 – **Examples of the division of aircraft into major zones**