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ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION
R 482

NUMBERING OF AIRCRAFT ENGINES, ENGINE CYLINDERS AND COMBUSTION CHAMBERS, AND DIRECTION OF ROTATION OF ENGINES AND PROPELLERS

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BRIEF HISTORY

The ISO Recommendation R 482, *Numbering of Aircraft Engines, Engine Cylinders and Combustion Chambers, and Direction of Rotation of Engines and Propellers*, was drawn up by Technical Committee ISO/TC 20, *Aircraft*, the Secretariat of which is held by the British Standards Institution (BSI).

Work on this question by the Technical Committee began in 1953 and led, in 1961, to the adoption of a Draft ISO Recommendation.

In June 1963, this Draft ISO Recommendation (No. 587) was circulated to all the ISO Member Bodies for enquiry. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies:

Belgium	Greece	Turkey
Canada	Indonesia	United Kingdom
Chile	Italy	U.S.A.
Colombia	Japan	U.S.S.R.
Czechoslovakia	Netherlands	Yugoslavia
Denmark	Spain	
Germany	Sweden	

Two Member Bodies opposed the approval of the Draft:

France
Switzerland

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in April 1966, to accept it as an ISO RECOMMENDATION.

ISO Recommendation R 482 April 1966

NUMBERING OF AIRCRAFT ENGINES, ENGINE CYLINDERS AND COMBUSTION CHAMBERS, AND DIRECTION OF ROTATION OF ENGINES AND PROPELLERS

1. NUMBERING OF AIRCRAFT ENGINES

Aircraft engine positions should be numbered in the order in which their axes are encountered by a plane parallel to the plane of symmetry of the aircraft and moving from port to starboard. When this plane meets the axes of several engines simultaneously they should be numbered from front to rear, or if necessary, from the bottom upwards. The separate power sections of coupled engines should be designated by the engine number determined in the foregoing manner, followed by a letter "A", "B", etc., according to whether the power sections are port or starboard, or bottom or top respectively (see Fig. 1).

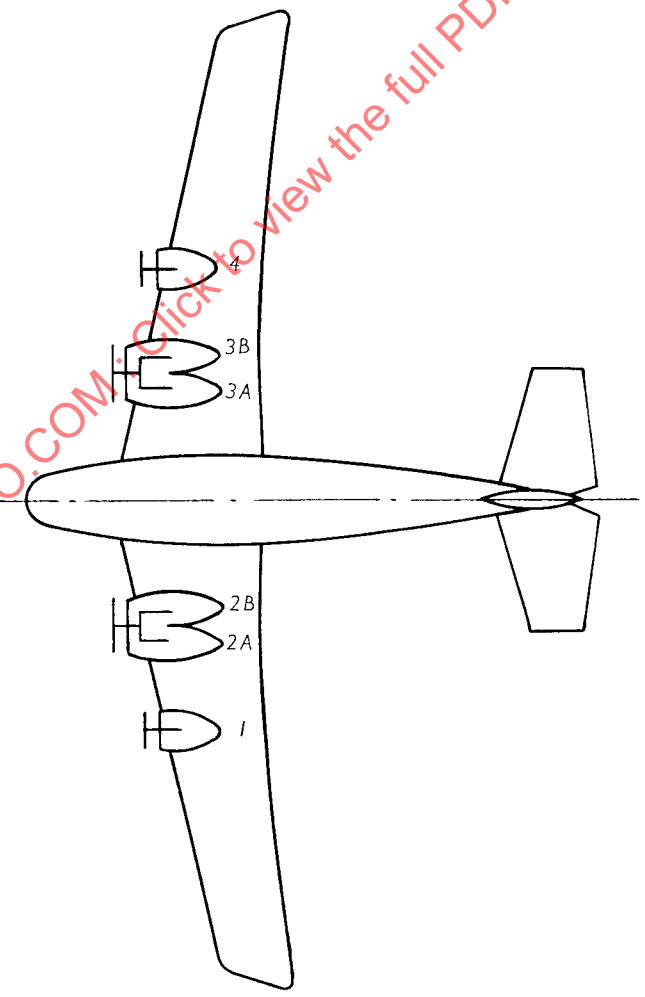

FIG. 1. — **Numbering of aircraft engines**

2. NUMBERING OF AIRCRAFT ENGINE CYLINDERS AND COMBUSTION CHAMBERS

2.1 For the purposes of clauses 2.2 and 2.3 below, the observer is regarded as viewing the engine from the end remote from the propeller, or from the end remote from the shaft transmitting the greatest part of the power of the engine.

2.2 In-line piston engines (see Fig. 2)

2.2.1 *Single-bank engines.* The cylinders of single-bank engines should be numbered 1, 2, 3, etc., beginning with the cylinder nearest to the observer.

2.2.2 *Double- and multi-bank engines.* The banks of cylinders in double- and multi-bank engines should be designated by the letters A, B, C, etc., applied respectively to each bank in the order in which it would be encountered by a semi-plane centred upon the main shaft of the engine and rotating in a clockwise direction, starting from the twelve o'clock position.

Each cylinder should be designated by a letter followed by a number, the letter indicating the bank, as described above, and the number indicating the position of the cylinder in the bank, when counted from the cylinder nearest to the observer.

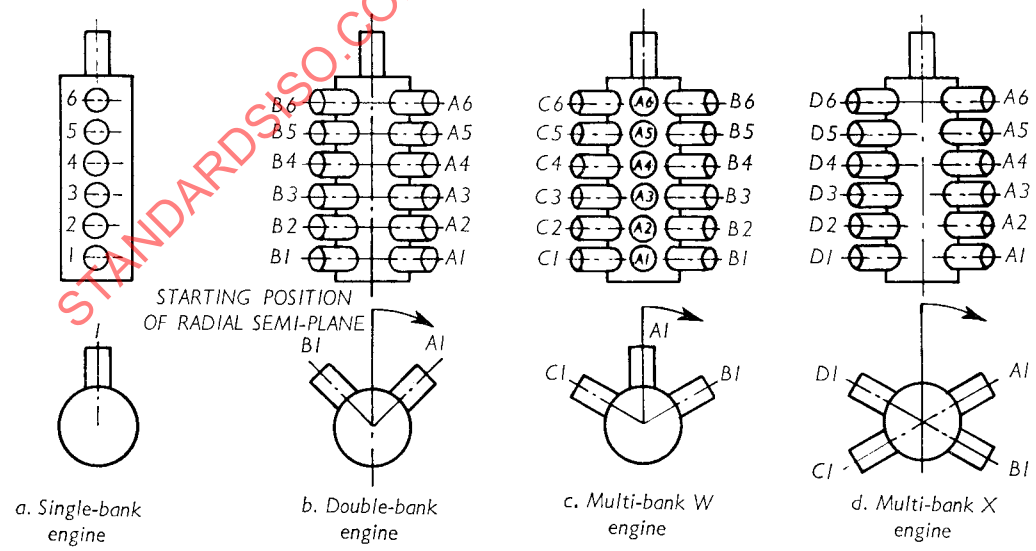

FIG. 2. — **Numbering of cylinders of in-line piston engines**

2.3 **Radial piston engines** (See Fig. 3)

2.3.1 *Single-row and staggered double-row engines.* The cylinders of single-row and staggered double-row engines should be numbered 1, 2, 3, etc., in the order in which they would be encountered by a rotating semi-plane as described in clause 2.2.2.

2.3.2 *Staggered multi-row engines.* The rows of cylinders in staggered multi-row engines should be designated by the letters A, B, C, etc., beginning with the row nearest to the observer.

Each cylinder should be designated by a letter followed by a number, the letter indicating the row, as described above, and the number indicating the position of the cylinder in the row when counted by the method described in clause 2.3.1.

2.3.3 *Straight double- and multi-row engines.* The cylinders of double- and multi-row engines with the cylinders in straight lines should be numbered in the same way as those of multi-bank in-line engines (see clause 2.2.2).

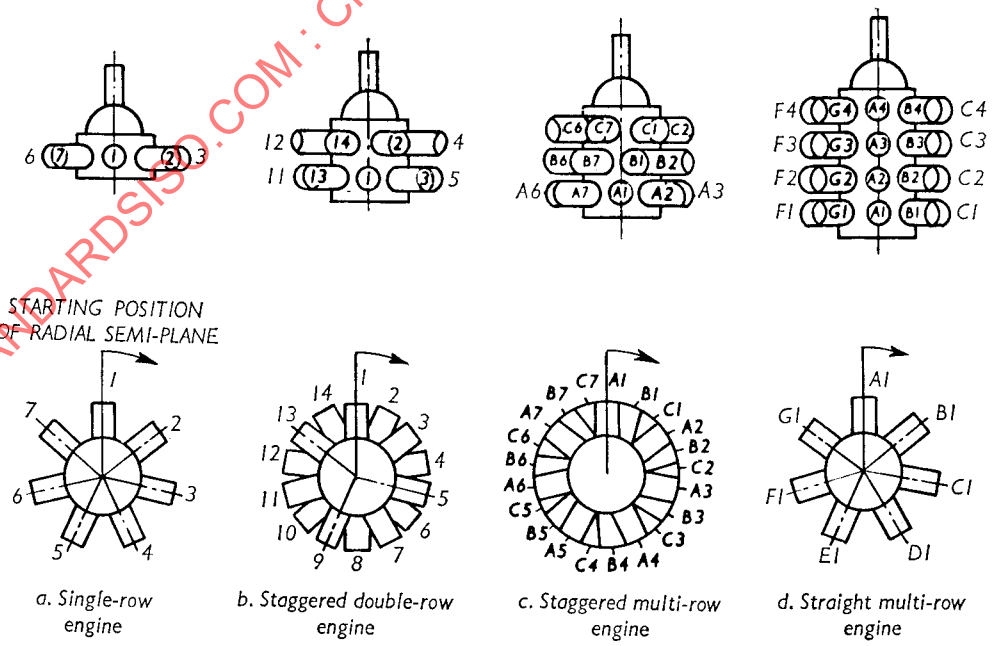

FIG. 3. — **Numbering of cylinders of radial piston engines**

2.4 **Turbine engines** (see Fig. 4)

The combustion chambers of turbine engines should be numbered 1, 2, 3, etc., in the order in which they would be encountered by a semi-plane centred upon the main shaft of the engine and rotating in a clockwise direction as viewed by an observer looking at the turbine in the direction opposite to the general flow of air in the engine, the semi-plane being initially at the twelve o'clock position.

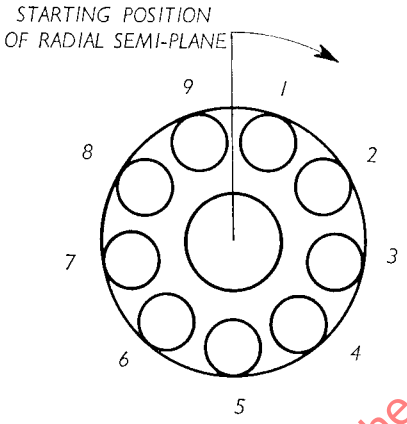

FIG. 4. — **Numbering of turbine engine combustion chambers**

2.5 **Rotorcraft engines**

For aeroplane engines installed in rotorcraft the provisions of section 2 should be applied.

For engines installed with the axis of the main shaft sensibly vertical, and for engines intended specifically for rotorcraft, the provisions of section 2 should be applied, except for the starting position of the rotating semi-plane, which may be selected by the constructor. In such cases, the cylinders and combustion chambers should be clearly marked with letters and numbers visible when the engine is installed.

3. DIRECTION OF ROTATION OF ENGINES

The direction of rotation of engines should be described by reference to the direction of rotation of the shaft transmitting the greatest part of the power of the engine. It should be expressed as clockwise or counter-clockwise, as appropriate, piston engines being viewed from the end remote from the shaft, and turbine engines being viewed in the direction opposite the general flow of air in the engine.