

---

**INTERNATIONAL STANDARD**



**1509**

---

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

---

**General purpose push-pull three-pole circuit-breakers  
for aircraft — Performance requirements**

First edition — 1973-11-01

---

UDC 629.7.064.5 : 621.316.573.066.33 : 620.1

Ref. No. ISO 1509-1973 (E)

**Descriptors** : aircraft, aircraft equipment, circuit breakers, design, ratings, tests, marking.

## FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO Member Bodies). The work of developing International Standards is carried out through ISO Technical Committees. Every Member Body interested in a subject for which a Technical Committee has been set up has the right to be represented on that Committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

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.

Prior to 1972, the results of the work of the Technical Committees were published as ISO Recommendations; these documents are now in the process of being transformed into International Standards. As part of this process, International Standard ISO 1509 replaces ISO Recommendation R 1509-1570 drawn up by Technical Committee ISO/TC 20, *Aircraft and space vehicles*.

The Member Bodies of the following countries approved the Recommendation :

|                     |             |                |
|---------------------|-------------|----------------|
| Australia           | India       | Spain          |
| Belgium             | Israel      | Switzerland    |
| Brazil              | Italy       | Thailand       |
| Canada              | Netherlands | Turkey         |
| Czechoslovakia      | New Zealand | United Kingdom |
| Egypt, Arab Rep. of | Poland      | U.S.S.R.       |
| France              | Portugal    | Yugoslavia     |

No Member Body expressed disapproval of the Recommendation.

# General purpose push-pull three-pole circuit-breakers for aircraft – Performance requirements

## 1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies the performance requirements for push-pull, three-pole, trip-free circuit-breakers having an inverse time/current characteristic, of normal ratings up to and including 35 A, for use in nominal 115/200 V three-phase 400 Hz a.c. circuits.

## 2 REFERENCES

ISO/R 224, *Standard form of declaration of performance of aircraft electrical equipment.*

ISO/R 469, *Dimensions and conductor resistance of general purpose electrical cables with copper conductors for aircraft.*

ISO/R 474, *Performance requirements for general purpose electrical cables with copper conductors for aircraft.*

ISO/R 1033, *Dimensions for general purpose push-pull three-pole circuit-breakers for aircraft.*

ISO 1540, *Aircraft electrical power systems – Characteristics.*<sup>1)</sup>

ISO ..., *Aircraft equipment – Environmental and operational conditions.*<sup>2)</sup>

## 3 DEFINITIONS

**3.1 push-pull circuit-breaker:** A circuit-breaker with a single button to trip and reset the breaker, by pushing to make and pulling to break.

**3.2 trip-free circuit-breaker:** A circuit-breaker so designed that holding the push-button in the closed position will not override the tripping mechanism and will not permit subsequent closure of the contacts, until the push-button has been returned to the open position and the tripping mechanism has reset.

1) At present at the stage of draft.

2) In preparation.

## 4 DESIGN REQUIREMENTS

**4.1** The circuit-breaker shall be suitable for use at ambient temperatures from  $-40$  to  $+55$  °C and at altitudes up to 18 300 m.

**4.2** The circuit-breaker shall be operated by a single button, pushed to make and pulled to break the circuit, the button being perpendicular to the plane of the mounting panel. The portion of the button visible when the circuit-breaker is in the closed position shall be black. A white band on the button shall be exposed when the circuit-breaker is in the open position.

**4.3** The circuit-breaker shall be suitable for through-panel mounting, preferably by single-hole fixing, and shall operate satisfactorily when mounted in any attitude.

**4.4** The circuit-breaker shall be trip-free, and shall incorporate an automatic overload tripping device in each pole.

**4.5** The three sets of contacts shall open and close together when manually operated at normal load and shall open together when automatically tripped on overload current in one or more lines, when the push-button shall move to the open or off position. The difference in time between the making or breaking of the three sets of contacts shall be not more than 5 ms.

**4.6** The circuit-breaker shall be so designed that, after tripping on overload, it cannot re-close automatically.

## 5 DIMENSIONS

The envelope and fixing dimensions for the circuit-breakers shall comply with ISO/R 1033.

## 6 CONSTRUCTION

**6.1** The push-button shall be insulated from all current-carrying parts, and shall not remain in an intermediate position, or give a false indication.