



**Australian Government**  
**Civil Aviation Safety Authority**

**DRAFT**

**ADVISORY CIRCULAR**

**AC 21-601**  
**Australian Technical Standard Order**  
**authorisation**

Advisory Circulars are intended to provide advice and guidance to illustrate a means, but not necessarily the only means, of complying with the Regulations, or to explain certain regulatory requirements by providing informative, interpretative and explanatory material.

**Advisory Circulars should always be read in conjunction with the relevant regulations.**

## Audience

This Advisory Circular (AC) applies to:

- the Australian aviation manufacturing industry
- Civil Aviation Safety Authority (CASA) authorised persons contracted by the Australian aviation manufacturing industry.

## Purpose

This AC explains the requirements for the issue of Australian Technical Standard Order (ATSO) authorisations under Subpart 21.O of the *Civil Aviation Safety Regulations 1998 (CASR)* and the rules governing the holders of these authorisations.

This AC is part of a series that provides guidance material regarding approvals for manufacturing of aircraft and aeronautical products under Part 21. Related ACs include: AC 21-14, AC 21-16 and AC 21-27.

## For further information

For further information on this AC, contact CASA Manufacturing (email: [Manufacturing@casa.gov.au](mailto:Manufacturing@casa.gov.au); telephone 131 757).

Unless specified otherwise, all subregulations, regulations, divisions, subparts and parts referenced in this AC are references to the *Civil Aviation Safety Regulations 1998 (CASR)*.

## Status

This version of the AC is approved by the Executive Manager, Standards Division.

Version	Date	Details
v2.0		This AC supersedes AC 21-601(0) dated July 2005. This version has been amended to: <ul style="list-style-type: none"> <li>• update contact details</li> <li>• cross-reference quality system approval details with AC 21-27</li> <li>• remove the references to regulation 35 of the <i>Civil Aviation Regulations 1988 (CAR)</i> (which has been repealed)</li> <li>• remove information previously presented within the appendices but now found to be unnecessary given the maturity of the ATSO system.</li> </ul>
(0)	July 2005	Initial issue

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# 1 Reference material

## 1.1 Acronyms

The acronyms and abbreviations used in this AC are listed in the table below.

Acronym	Description
AC	Advisory Circular
ATSO	Australian Technical Standard Order
ATSOA	Australian Technical Standard Order Authorisation
CAR	<i>Civil Aviation Regulations 1988</i>
CASA	Civil Aviation Safety Authority
CASR	<i>Civil Aviation Safety Regulations 1998</i>
EASA	European Aviation Safety Agency
ETSO	European Technical Standard Order (issued by EASA)
FAA	Federal Aviation Administration (of the United States of America)
NAA	National Airworthiness Authority
PAH	Production Authorisation Holder
RTCA	Radio Technical Commission for Aeronautics
SAE	Society of Automotive Engineers
TSO	Technical Standard Order (of the FAA)

## 1.2 Definitions

Terms that have specific meaning within this AC are defined in the table below.

Term	Definition
Appliance	Any instrument, mechanism, equipment, part, apparatus, appurtenance or accessory, including communication equipment, that is used or intended to be used in operating or controlling an aircraft in flight, is installed in or attached to the aircraft and is not a part of an airframe, engine or propeller.
Article	Material, part, process or appliance used on civil aircraft.
Manufacturer	A Production Authorisation Holder who produces products in accordance with Subpart 21.O.
Australian Technical Standard Order (ATSO)	A minimum performance standard issued by CASA for specified articles used on civil aircraft.

Term	Definition
ATSO authorisation (ATSOA)	Either of: <ul style="list-style-type: none"> <li>• a CASA design and production approval issued to the manufacturer of an article that has been found to meet a specific ATSO or Federal Aviation Administration (FAA) Technical Standard Order (TSO) or European Technical Standard Order (ETSO)</li> <li>• a CASA production approval issued to the manufacturer of an article manufactured in accordance with an FAA letter of TSO design approval.</li> </ul>
An FAA letter of TSO design approval	An FAA design approval for an article manufactured outside the United States of America that has been found to meet a specific TSO in accordance with the procedures of Federal Aviation Regulations (FARs) section 21.617.
A letter of ATSO design approval	A CASA design approval for a foreign-manufactured article which has been found to meet a specific ATSO in accordance with the procedures of regulation 21.617.

### 1.3 References

#### Regulations

Regulations are available on the ComLaw website <http://www.comlaw.gov.au/Home>

Document	Title
Part 21	Certification and airworthiness requirements for an aircraft and parts

#### Advisory material

CASA's Advisory Circulars are available at <http://www.casa.gov.au/AC>

Document	Title
AC 21-14	Production Certificates
AC 21-16	Australian parts manufacturer approval
AC 21-27	Manufacturing Approval - Overview
RTCA Document DO-138	Environmental Conditions and Test Procedures for Airborne Electronic/Electrical Equipment and Instruments
RTCA Document DO-160	Environmental Conditions and Test Procedures for Airborne Equipment
RTCA Document DO-178	Software Considerations in Airborne Systems and Equipment Certification
RTCA Document DO-254	Design Assurance Guidance for Airborne Electronic Hardware

#### Australian Technical Standard Orders

A list of current approved ATSOs can be found on the CASA website at <http://www.casa.gov.au/airworth/atso/index.htm>

## 1.4 Forms

CASA's forms are available at <http://www.casa.gov.au/forms>

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<b>Form number</b>	<b>Title</b>
Form 724	Statement of Conformity
Form 849	Production Approval – Application

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## 2 Introduction

This Advisory Circular (AC) provides information and guidance regarding the Australian Technical Standard Order authorisation (ATSOA) system. This is one method for manufacturers to obtain CASA approval for the manufacture of articles used on Australian aircraft.

An ATSOA is issued to the manufacturer of an article that has been found to meet a performance standard specified in one of the following:

- an ATSO
- a Federal Aviation Administration (FAA) Technical Standard Order (TSO)
- an European Technical Standard Order (ETSO).

ATSOAs are issued on a variety of articles and appliances, such as:

- communication and navigation equipment
- instruments
- generators
- wheels and tyres
- oxygen systems
- mechanical fasteners
- seats and seat belts.

Under the ATSOA system, the manufacturer of articles certifies, after suitable evaluation and testing, that an article complies with the minimum performance standards of a specified ATSO, TSO or ETSO. CASA then finds compliance against Part 21 and authorises the production of the article under the ATSOA system.

An ATSOA allows the holder to identify the article with an ATSO marking. However, an ATSOA does not confer installation authority. The installation of an article manufactured under an ATSOA must be approved separately in a manner acceptable to CASA; for example, under a design approval pursuant to Subpart 21.M, a Supplemental Type Certificate or Type Certificate.



## 3 ATSO authorisation process

### 3.1 Application

3.1.1 Under regulation 21.605, an applicant (article manufacturer) may apply to CASA for an ATSOA. The applicant should complete and submit CASA Form 849, together with the required information mentioned in paragraph 3.1.2, to:

CASA Permission Application Centre  
GPO Box 2005  
CANBERRA ACT 2601  
(email: [regservices@casa.gov.au](mailto:regservices@casa.gov.au))

3.1.2 Applicants should including the following information in their ATSOA application:

- a statement of conformance certifying that the applicant has met the requirement of Subpart 21.O and the article concerned meets the applicable ATSO, TSO or ETSO performance standards effective on the date of application
- a copy of the technical data required in the applicable ATSO, TSO or ETSO (refer to section 3.2 for further detail)
- a description of the quality system to the level of detail specified in regulations 21.143 and 21.144. Refer also to AC 21-27 (Appendix A) for more detail<sup>1</sup>
- CASA Form 724.

3.1.3 If the applicant expects minor changes to the article they may include open brackets after the part number to denote the changes. This can be achieved by the use of letters or numbers, or a combination of both; for example: P/N 1234 ( ).

3.1.4 Cost recovery procedures are applicable for an ATSOA. On lodgement of an application CASA will provide an estimate of the costs.

### 3.2 Design approval

#### 3.2.1 Required technical data

3.2.1.1 Regulation 21.605 requires that an applicant must show that the design of the article meets the performance standards specified in the applicable ATSO, TSO or ETSO that is effective on the date of application for that article.

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<sup>1</sup> The applicant may refer to current quality system data filed with CASA as part of a previous ATSOA application.

3.2.1.2 The required technical data is listed in the applicable ATSO, TSO or ETSO. The data generally includes:

- a complete technical description of the article, including detailed drawings, manufacturing procedures, material identification and specifications
- analysis and test results to substantiate compliance against the ATSO, TSO or ETSO
- conformity inspection reports for the tested components
- if required, pilot or crew member operating procedures and limitations, installation instructions, continuing airworthiness instructions and maintenance instructions.

3.2.1.3 CASA may be satisfied that the design of the article complies with the applicable ATSO, ETSO or TSO, including any deviations approved under regulation 21.609, on the basis of any of the following:

- an examination of the design
- the technical data for the design approved under regulation 21.009
- a certificate from an approved design organisation under subregulation 21.605 (7).

### **3.2.2 Deviation from ATSO, TSO or ETSO performance standards**

3.2.2.1 Regulation 21.609 allows an article manufacturer to request CASA to approve a deviation from the performance standard of an ATSO, TSO or ETSO. The article manufacturer must describe the deviation and submit to CASA all pertinent data to show that the standards from which a deviation is requested are compensated for by factors or design features providing an equivalent level of safety.

3.2.2.2 In the case of environmental test procedures and criteria, CASA will normally approve a request to use Radio Technical Commission for Aeronautics (RTCA) Document DO-160, including the latest revision, in lieu of the environmental test procedures and RTCA criteria specified in the ATSO or TSO (for example, RTCA Document DO-138 or a previous revision of RTCA Document DO-160). However, mixing of environmental conditions and test procedures from different documents, such as part from RTCA Document DO-160 and the remainder from a Society of Automotive Engineers (SAE) document, is not acceptable.

### **3.2.3 Approval criteria for appliances that include embedded software**

3.2.3.1 For appliances that include embedded software, the applicant should submit to CASA a certification plan for the software as early as possible. This will allow for early discussion and agreement between the applicant and CASA on the design assurance level, the verification approach, and the documentation to be prepared and submitted.

3.2.3.2 One of the following guidelines should be used for software evaluation:

- For an ATSO, TSO or ETSO that specifies software guidelines, the applicant's software development process should be conducted in accordance with those guidelines. If the ATSO, TSO or ETSO refers to previous versions of RTCA Document DO-178, the applicant may elect to comply with RTCA Document DO-178C subject to agreement with CASA. CASA recommends the use of RTCA Document DO-178C.

- For an ATSO, TSO or ETSO that does not specify any software guidelines, the applicant's software development process should meet, at a minimum, the objectives of RTCA Document DO-178B (including the latest amendment).
- For an ATSO, TSO or ETSO that specifies complex hardware, the applicant's design assurance process should be conducted in accordance with RTCA Document DO-254.

3.2.3.3 CASA may request design review meetings with the applicant in order to become familiar with the appliance design features. Subsequent to initial acceptance by CASA, the applicant and CASA should agree on the Means of Compliance and record this in a Certification Plan.

3.2.3.4 Where the Certification Plan requires a CASA specialist to witness a test, the applicant would be requested to provide test program documentation to CASA for review and acceptance prior to conducting the test(s).

3.2.3.5 Where CASA is not involved in test witnessing and subject to the agreed procedures, test program documentation must be submitted to CASA for review and acceptance prior to the applicant conducting the test(s).<sup>2</sup>

### 3.3 Quality system approval

3.3.1 An applicant for an ATSOA should submit to CASA a quality system manual for approval (refer regulations 21.143 and 21.144). This submission must describe the inspection and test procedures necessary to ensure that each article manufactured under the ATSOA is in a condition for safe operation and conforms to the approved design.<sup>3</sup> Further guidance on the quality system is provided in AC 21-27.

### 3.4 Issue of an ATSO authorisation

3.4.1 CASA will issue an ATSOA if the applicant has, or will have, the ability to produce articles that comply with the ATSO, TSO or ETSO (including any approved deviations).

3.4.2 For CASA to be able to make a determination in relation to the applicant having the ability to produce articles that comply with the ATSO, TSO or ETSO, CASA may conduct an assessment of the applicant's manufacturing facility and manufacturing processes and procedures.

### 3.5 Transferability

3.5.1 ATSOAs may not be transferred; relocation of facilities or name change negates the current ATSOA. However, an application for a new ATSOA may be made based on previously approved data. A new ATSOA is issued only after CASA has evaluated and accepted the quality control system and manufacturing facilities.

<sup>2</sup> In accordance with paragraph 21.605 (5) (a).

<sup>3</sup> In accordance with paragraph 21.605 (4) (b).

## 4 Obligations of ATSOA holders

### 4.1 General responsibilities

4.1.1 An article manufacturer to whom an ATSOA for the article has been issued should ensure that:

- the article is manufactured in accordance with Subpart 21.O and the applicable ATSO, TSO or ETSO (including any deviations approved under subregulation 21.609 (3) )
- all tests and inspections required under these regulations, or the applicable ATSO, TSO or ETSO, are conducted, and a quality system is established and maintained that is adequate to ensure that the article meets the requirements stated above and is in a condition for safe operation.

#### 4.1.2 Marking of articles

4.1.2.1 The holder of an ATSOA for an article should ensure that the article is permanently and legibly marked with the following information:

- name and address of the manufacturer
- name, type, part number or model designation of the article
- serial number or date of manufacture of the article or both
- the applicable ATSO, TSO or ETSO number with the prefix ATSO.

**Note:** To remove any ambiguity for TSO, the marking should be ATSO-TSO-#### or in the case of ETSO, ATSO-ETSO-####. This clarification will apply from the date of issue of this AC.

4.1.2.2 If the article was manufactured in accordance with an FAA letter of TSO Design Approval, it may be marked with the applicable TSO number with the prefix TSO instead of ATSO.

#### 4.1.3 Record keeping requirements

4.1.3.1 An article manufacturer holding an ATSOA must keep a complete and current technical data file for each type or model article at their factory. This data must also include design drawings and specifications, until it no longer manufactures the article.

4.1.3.2 For each article manufactured under an ATSOA, a manufacturer must retain the inspection records for a period of at least two years.<sup>4</sup>

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<sup>4</sup> In accordance with regulation 21.613.

## 5 Design changes by a manufacturer holding an ATSOA

### 5.1 Type of design change

5.1.1 Any change to the design of an article manufactured under an ATSOA is to be determined as major or minor by the manufacturer. A major change to the design of an article is a change that is extensive enough to require a substantially complete investigation to determine compliance with an ATSO, TSO or ETSO.

### 5.2 Minor changes

5.2.1 The manufacturer may make minor changes without CASA approval. The manufacturer is to advise CASA of the change and submit the revised data required by the ATSO, TSO or ETSO. Appendix A shows a sample letter to notify CASA of a minor change. Details that should be included are:

- the basic model number and/or part number and the applicable ATSO, TSO or ETSO number
- the date of the original CASA letter of authorisation
- a statement that a minor change has been made
- a brief description of the change
- a statement (certifying) that modified articles still meet the applicable ATSO, TSO or ETSO, and the provisions of Subpart 21.O
- a list of the applicable data being submitted to describe the minor change as required by regulations 21.611 and 21.605.

5.2.2 In the case of a minor change, the article will keep the original model number. The changed article may be identified with a new part number or a dash number if series approval has been granted as provided in subregulation 21.605 (3).

5.2.3 Subsequent minor changes need to be assessed against all previous minor changes to ensure that the cumulative changes do not cause a situation that may change or affect the certified product.

### 5.3 Major changes

5.3.1 Major changes will be treated as a new application. Before making such a change, the manufacturer is to assign a new type or model designation to the article and apply for an ATSOA under regulation 21.605.

### 5.4 Surveillance by CASA

5.4.1 CASA will conduct surveillance on all ATSOA holders directed at the production facilities, suppliers (as required), manufactured articles and the quality system. If an inspection or test conducted during such surveillance discloses that any part of the data or system, which was originally approved, does not fully meet the applicable requirements, CASA will request changes to the quality system or data, and/or issue

Non-Compliance Notices. If the ATSOA holder does not comply with a request for inspection/surveillance from CASA, the ATSOA may be suspended until the request is complied with under the provisions of subregulation 21.615 (2).

- 5.4.2 If the article does not meet the performance standards of the applicable ATSO (including any approved deviations) then CASA may suspend or cancel the ATSOA or letter of ATSO design approval of any article manufacturer.

## 6 Issue of letters of ATSO design approval for imported articles

### 6.1 Application

- 6.1.1 A letter of ATSO design approval may be issued for an article that is manufactured in a foreign country with which Australia has an agreement for the acceptance of these articles for export and import.
- 6.1.2 CASA will issue a letter of ATSO design approval if the National Airworthiness Authority (NAA) of the country in which the article was manufactured certifies that the article has been examined, tested, and found to meet the applicable ATSO or the applicable performance standards of the country in which the article was manufactured and any other performance standards CASA prescribes to provide a level of safety equivalent to that provided by the ATSO.
- 6.1.3 A foreign manufacturer who wants to obtain a letter of ATSO design approval should submit the application through its NAA to:

CASA Manufacturing  
Civil Aviation Safety Authority  
GPO Box 2005  
Canberra ACT 2601  
AUSTRALIA  
(email: <mailto:manufacturing@casa.gov.au>)

- 6.1.4 The application should include the NAA certification explained in paragraph 6.1.2 and the technical data mentioned in paragraph 3.1.2.

### 6.2 Production and marking

- 6.2.1 After CASA has issued a letter of ATSO design approval, the article can be produced under a manufacturing approval issued by the NAA of the country in which the appliance was manufactured.
- 6.2.2 Articles imported into Australia should be marked with the ATSO marking requirements and accompanied by an airworthiness approval issued by, or on behalf of the NAA of the country in which the appliance was manufactured.

## **Appendix A**

### **Example of an ATSOA minor design change notification statement of conformance**



*Date (dd/mm/yyyy)*

To:

CASA Manufacturing  
Civil Aviation Safety Authority  
GPO Box 2005  
Canberra ACT 2601  
AUSTRALIA  
(email: [Manufacturing@casa.gov.au](mailto:Manufacturing@casa.gov.au))

**Notification of Minor Change in accordance with regulation 21.611(1) of CASR  
ATSO (number) (Model, type, or part number)-( ) Series**

Dear Sir

Notification of minor change for (Model/Part Number) authorisation granted on (date) - for Australian Technical Standard Order (ATSO) (number).

The ATSO authorisation approved (date of approval, part number). The minor change consists of (give what the authorisation was and what the change is).

The undersigned hereby certifies that, with the minor change, the above article(s) meet(s) the performance standards of (ATSO) (number). In addition, applicable provisions of Part 21 of CASR have been met.

The technical data related to the ATSO authorisation that has been changed is attached.

Yours sincerely

Signed