

Revision 3

xx Xxx 2024

Acceptability of Parts

General

Civil Aviation Authority (CAA) advisory circulars (ACs) contain guidance and information about standards, practices, and procedures that the Director has found to be an **acceptable means of compliance** with the associated rules and legislation.

Consideration will be given to other methods of compliance that may be presented to the Director. When new standards, practices, or procedures are found to be acceptable, they will be added to the appropriate AC.

Purpose

This AC describes an acceptable means of compliance with Civil Aviation Rules, Parts 21 *Certification of Products and Parts* Subpart K and 43 *General Maintenance Rules* Subpart B, relating to the use of acceptable parts on type certificated aircraft.

Related Rules

This AC relates specifically to Civil Aviation Rules, Part 21, *Certification of Products and Parts*, Part 43, Subpart K, *General Maintenance Rules*, and Part 145, *Aircraft Maintenance Organisations – Certifications*.

Change Notice

Revision 3:

- Adds a rule reference in section 2.2, *Part 43 – Maintenance practices*
- Clarifies section 2.4, *Acceptable parts*, and section 5.2, *Determining eligibility*, with regards to the use of CAA Form Two,
- Deletes advice about finite life components in section 2.4, *Acceptable parts*.
- Deletes examples of unacceptable parts in section 2.5, *Unacceptable parts*.
- Moves the section on finite life components from section 3.1, *General*, to new section 5.3, *Conformity*.

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Note: the previous section 5.3, 5.4, Eligibility of CASA Form 1 for CAANZ-registered aircraft, is now section 5.4.

~~2.~~

- ~~• Clarifies eligibility of CASA Form 1 in sections 2.4, 3.1 and 5.2, and deletes clarification ‘formerly DA1’.~~
- ~~• Deletes clarification ‘formerly JAA Form One’, after EASA Form 1 in sections 2.4, 3.1 and 5.2.~~
- ~~• Deletes clarification ‘formerly TC24 0078’ after Transport Canada Form One in sections 2.4, 3.1 and 5.2.~~
- ~~• Adds section 5.3 about the eligibility of CASA Form 1 for a CAANZ Part 145-certificated organisation.~~
- ~~• Deletes note about the incorrect rule reference which was corrected in 2021.~~
- ~~• Makes minor stylistic changes to align with current AC format.~~

Version History

This revision history log contains a record of revisions made to this AC.

Revision No.	Effective Date	Summary of Revisions
AC00-1, Rev 0	24 July 2007	This was the initial issue of this AC.
AC00-1, Rev 1	5 April 2019	<p>Corrected out-of-date references.</p> <p>Added guidance on Parts Manufacturer Approval (PMA) parts</p> <p>Made editorial changes as follows:</p> <ul style="list-style-type: none"> • Change notice updated • Cancellation notice inserted • Version history log inserted • The numbering system updated • Section 2 revoked and replaced. • Sections 5 and 6 amended. <p>Note: On 14 September 2021, an incorrect rule reference at section 2.5 was changed to 43.53. Formerly the reference was listed as 43.59, which was incorrect.</p>
AC00-1, Rev 2	24 May 2024	Clarified eligibility of CASA Form 1 in sections 2.4, 3.1 and 5.2, and deletes clarification ‘formerly DA1’.

		<p>Deleted clarification ‘formerly JAA Form One’, after EASA Form 1 in sections 2.4, 3.1 and 5.2.</p> <p>Deleted clarification ‘formerly TC24 0078’ after Transport Canada Form One in sections 2.4, 3.1 and 5.2.</p> <p>Added section 5.3 about the eligibility of CASA Form 1 for a CAANZ Part 145-certificated organisation.</p> <p>Deleted a note about the incorrect rule reference as this was corrected in 2021.</p> <p>Made minor stylistic changes to align with current AC format.</p>
AC00-1, Rev 3	Xx xxxx 2024	<p>Adds a rule reference in section 2.2, <i>Part 43 – Maintenance practices</i></p> <p>Clarifies section 2.4, <i>Acceptable parts</i>, and section 5.2, <i>Determining eligibility</i>, with regards to the use of CAA Form Two</p> <p>Deletes advice about finite life components in section 2.4, <i>Acceptable parts</i>.</p> <p>Deletes examples of unacceptable parts in section 2.5, <i>Unacceptable parts</i>.</p> <p>Moves the section on finite life components from section 3.1, <i>General</i>, to new section 5.3, <i>Conformity</i>.</p> <p>Note: the previous section 5.3, 5.4, Eligibility of CASA Form 1 for CAANZ-registered aircraft, is now section 5.4.</p>

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1. Introduction

The basis for the airworthiness of an aeronautical product is that the product must conform to an approved design and be in a condition for safe operation. In order for the product to continue to be airworthy, any replacement or modification parts installed must also conform to the approved designs applicable to that product. Part 21, *Certification of Products and Parts*, requires aircraft parts to meet certain conditions to be considered acceptable and Part 43, *General Maintenance Rules*, requires each installer to use acceptable parts. Part 145, *Aircraft Maintenance Organisations –Certifications*, requires an aircraft maintenance organisation to establish procedures to ensure the acceptable quality of parts and assemblies.

Investigations in the USA and Europe have highlighted those airworthiness authorities' problems with unacceptable parts in the aviation industry. Investigations by CAA New Zealand have also shown that the New Zealand industry is not immune to the problems of unacceptable parts.

This AC provides guidance on determining the acceptability of parts for use on type-certificated aircraft.

2. General

Under the New Zealand Civil Aviation Regulations 1953, CAA was prescriptive in the type of documents required to determine a part's eligibility for use. This prescriptive requirement was carried over to the civil aviation rules (CARs) and tightened when the occurrences of unapproved parts increased.

Correct documentation generally assures the acceptability of a part. These documents, when correctly completed, assure a purchaser of the eligibility of aircraft parts.

2.1 Part 21 Subpart K – Materials, parts, processes, and appliances

This Subpart defines those materials, parts, processes, and appliances that are considered acceptable for the use on type-certificated products. Rule 21.303, *Replacement and modification materials, parts, and appliances*:

- lists the particular requirements for a material, part, or appliance to be eligible for installation.
- prescribes the documentation requirements for New Zealand parts, and also
- provides for the acceptance of imported parts by the Director.

Acceptance under rule 21.303 does not require the acceptance of individual parts by the Director, as this is neither feasible nor appropriate.

The rule provides requirements that, if complied with, should ensure the acceptability of a particular part. This AC discusses documentation, traceability, type conformity, and quality to be considered by purchasers, operators, and installers when sourcing spare parts. Following these guidelines should assure the acceptability of parts.

2.2 Part 43 – Maintenance practices

Part 43 requires, in the relevant clauses of rule 43.53, *Performance of maintenance*, that each person performing maintenance on an aircraft or aircraft component:

- (a) uses acceptable methods, techniques, and practices
- (b) uses materials, parts, and appliances in accordance with the requirements of Part 21 Subpart K, **rule 21.303, *Replacement and modification materials, parts and appliances***
- (c) restores the aircraft or aircraft component to its original or properly modified condition.

These requirements of Part 43 mean that only acceptable parts may be used during the maintenance of a type-certificated aircraft or aircraft component.

2.3 Part 145 – Maintenance control procedures

Part 145 requires, in rule 145.59, *Maintenance control procedures*, that an aircraft maintenance organisation (AMO) establish procedures:

- (a) to ensure the use of acceptable maintenance techniques and practices
- (b) to ensure acceptable quality of raw materials, parts and assemblies purchased.

2.4 Acceptable parts

To be considered acceptable, **replacement parts should be accompanied by an appropriate document which identifies the part, and attests to its airworthiness.** ~~comply with one of the following conditions~~ **Documents which are considered appropriate include:**

- ~~(a) Engines and propellers should be accompanied with a correctly completed authorised release certificate, such as:~~
- (1) NZ CAA Form One
- (2) NZCAA Form Two**
- (3) FAA 8130-3
- (4) EASA Form 1
- (5) CASA Form 1 (but see section 5.3 below)
- (6) Transport Canada Form One, **or**
- (7) an equivalent document issued by an organisation in accordance with the airworthiness requirements of an ICAO Contracting State

Note 1: **In the case of NZCAA Form Two, as outlined in rule 43.54, Maintenance required under Part 145, maintenance which must be carried out by a Part 145-certificated organisation cannot be certified for release to service using a CAA Form Two.**

Note 2: *With reference to sections 2.4, 3.1 and 5.2, some parts that have been stored for a long time will have old versions of the acceptable forms, e.g. a JAA Form One instead of an EASA Form 1, a DA1 instead of the CASA Form 1, or a TC24-0078 instead of a Transport Canada Form One.*

- ~~(b) Finite life components, critical parts and parts that require regular maintenance by a certificated Part 145 Aircraft Maintenance Organisations—Certification should be:~~

- ~~(1) accompanied by one of the documents specified above, or~~
- ~~(2) if none of the documents specified above are available:~~

- ~~(i) accompanied by a NZ CAA Form Two~~
- ~~(ii) accompanied by another type of documentation recognised by the airworthiness authority of an ICAO Contracting State, or~~
- ~~(iii) passed to a New Zealand Part 145 organisation to determine the conformity of the item and issue a CAA Form One.~~

All other components should be examined by the purchaser, operator, and installer in accordance with this AC.

2.5 Unacceptable parts

In 1996 the Federal Aviation Administration (FAA) established a specific office for the reporting and investigation of what they termed 'suspected unapproved parts', or SUPS. This office provides various support services to aviation participants and can be found on the FAA website.

An unacceptable part is a material, part, or appliance that:

- (a) has not been manufactured or repaired in accordance with the appropriate procedures required by the rules
- (b) if serialised, has lost its manufacturer's serial number identification
- (c) does not conform to acceptable technical data (ATD) applicable to the type design, and/ or
- (d) does not conform to established industry specifications.

In New Zealand the above parts are considered unacceptable with respect to rules 43.53, 145.59 and 21.303, and must not be installed on a type-certificated product. Examples of unacceptable parts include, but are not limited to:

- (a) counterfeit or fraudulently marked parts, components, or materials
 - ~~stolen parts available on the surplus aviation parts market~~
 - ~~parts available from manufacturers or suppliers that do not hold the appropriate certifications to produce or supply those parts~~
- (b) parts that have not been maintained, repaired, or returned to service in accordance with Parts 43.

Identification of unacceptable parts is often difficult, due to the similarity of characteristics between unacceptable parts and acceptable parts. Unacceptable parts pose a significant safety risk when installed on aircraft, either intentionally or unintentionally.

It is the operator's responsibility to be aware of the possible consequences of using **inappropriate questionable** parts on certificated aircraft. An operator using a part of unknown quality, condition, or origin must be able to prove conclusively that such parts conform to the type design in accordance with rule 21.303(1), **and that the parts are in an airworthy condition.**

2.6 Definitions

See also *Civil Aviation Rules, Part 1 Definitions and Abbreviations* for other terms.

Article means any material, part, process, or appliance.

New means an aeronautical product that has accumulated no operating time or operating cycles.

~~**Newly overhauled** describes a product that has not been operated or placed in service, except for functional testing, since having been overhauled, inspected, and certified for return to service.~~

Rebuilt describes an aeronautical product that has been disassembled, cleaned, inspected, repaired as necessary, and reassembled to the same tolerances as a new item:

Surplus describes an aeronautical product that has been released as surplus by the military, by manufacturers, or by other parts suppliers.

Standard part: In relation to the Part 1 definition of a standard part, national and international aeronautical specifications are published by standard setting organisations and include design, material, manufacture, and identification requirements. Standard part specifications are detailed in one of the following series:

- (a) Air Force-Navy Aeronautical Standard (AN)
- (b) American National Standards Institute (ANSI)
- (c) Australian Standards (AS)
- (d) British Standards, Aircraft Series (BS)
- (e) Military Standards (MS)
- (f) Military Specifications (MIL-SPEC)
- (g) National Aerospace Standards (NAS)
- (h) Standards New Zealand Standards (NZS)
- (i) SAE Aerospace Standard (AS)
- (j) Society of Automotive Engineers (SAE)

2.7 Additional reference material

The latest revisions of the following documents also provide useful information on the determination of acceptable parts:

- (a) FAA ACs
 - (1) AC00-56 *Voluntary Industry Distributor Accreditation Program*
 - (2) AC20-29 *Use of Aircraft Fuel Anti-icing Additives*
 - (3) AC20-62 *Eligibility, Quality, & Identification of Aeronautical Replacement Parts*
 - (4) AC21-2 *Complying with the Requirements of Importing Countries or Jurisdictions When Exporting U.S. Products, Articles, or Parts*
 - (5) AC21-13 *Standard Airworthiness Certification of Surplus Military Aircraft and Aircraft Built from Spare and Surplus Parts*
 - (6) AC21-29 *Detecting and Reporting Suspected Unapproved Parts*
- (b) FAA Orders
 - (1) 8120.16 *Suspected Unapproved Parts Program*

- (2) 8130.21 *Procedures for Completion and Use of the Authorized Release Certificate, FAA Form 8130-3, Airworthiness Approval Tag*
- (3) 8110.42 *Parts Manufacturer Approval Procedures*

2.8 Parts manufacturing approval (PMA)

PMA is a unique design and manufacturing approval process developed by FAA in the 1950s and still widely used today, though typically only by FAA. However, CAA New Zealand and Australia's CASA (Australian PMAs or APMAs) also have the authority to approve them. The term applies to several different situations:

- (a) A company independently designs a **replacement** for an Original Equipment Manufacturer (OEM) part and obtains FAA approval of the design and the associated manufacturing and quality control process using the PMA approval procedure.
- (b) A company develops a **modification** to an aircraft, engine or component and obtains approval by a supplemental type certificate (STC). Production of the parts for the modification is carried out with a PMA approval and parts are identified as such.
- (c) A supplier is authorised by the OEM to manufacture and sell **replacement** parts under a license agreement. These parts are also identified as PMA parts.

Prices of PMA parts are typically less than the equivalent OEM prices. Since, in the aircraft maintenance environment, purchased parts account for a significant proportion of costs, the cost savings can sometimes be substantial. In addition to cost savings, PMA parts may provide other benefits such as:

- (a) improved availability in those cases where the OEM has stopped production of the original part
- (b) improved reliability, if the PMA supplier introduces a better design and/or manufacturing procedure
- (c) improved lead times, supporting faster turnaround and promoting inventory efficiency.

PMA parts should not be confused with standard parts which are acceptable for use in accordance with rule 21.303(6) and meet standards such as SAE, ANSI and MS.

Acceptability of PMA parts

In addition to CAA-approved NZPMA parts, the following PMA parts are acceptable to the Director for use in New Zealand, providing Part 21 Appendix D section (b) is complied with:

- (a) FAA
- (b) CASA APMA
- (c) Transport Canada Part Design Approval (PDA).

PMA parts must be appropriate to the product, component, or appliance (i.e. the product type is listed on the PMA approval) and the part which they replace must be a valid part on the product.

PMA parts must not conflict with data provided by the manufacturer of the product or assembly on which the PMA part is to be installed. Some manufacturers put specific conditions on the use of PMA parts. For example:

Continuing Airworthiness Notice – 05-007 Lycoming Service Instruction 1009 states:

The TBOs stated in this Service Instruction do not apply to engines that: [...] Have been assembled, repaired, or overhauled with FAA-PMA parts, where the FAA-PMA parts have not been approved for use by Lycoming.

This specific example stems from the risk that when Lycoming extended time between overhaul (TBO) intervals, the PMA approvals were not updated and still based on the older TBO intervals.

The owner/operator should check several things:

- Are the life limits different to the equivalent OEM parts?
- Is the aircraft/engine warranty voided by fitting the PMA parts?
- Can the OEM part ICA apply to PMA parts?

Owners of aircraft with PMA parts fitted have, in the past, wrongly assumed that only the OEM continuing airworthiness instructions are applicable. For example, CASA AWB 02-013 reported that a Cessna P210N with a PMA cylinder installed experienced catastrophic engine failure. The failure was due to a bad batch of cylinders. The PMA manufacturer had issued a mandatory service bulletin and would have replaced cylinders free of charge had the aircraft operator been aware of it. Persons responsible for maintenance should ensure they check service information from the PMA holder.

There is also a risk in the use of unapproved parts which claim to be 'PMA approved' but are not. A number of unscrupulous manufacturers have exploited the fact that, due to the large number of FAA PMA approval holders, it can be difficult to determine if the PMA parts are genuine. The FAA maintain a database of their PMA holders at this web site <http://rgl.faa.gov/>.

'STC' or 'modification' PMA parts

'STC' or 'modification' PMA parts may have different airworthiness limitations and their own Instructions for Continuing Airworthiness (ICAs).

In accordance with Part 21 Appendix D (b), STC PMA Parts:

- (a) will require the permission of / registration with STC holder, and
- (b) must have an STC that is supplemental to the type certificate (TC) accepted by the Director.

They may also:

- (a) require Inspection Authorisation (IA) conformity certification of their installation (i.e. embodiment of the modification)
- (b) have different Airworthiness Directive (AD) compliance, and/ or
- (c) have their own service information – SBs and so on.

3. Purchasers

3.1 General

To assure the acceptability of parts, purchasers should aim to ensure complete traceability, type conformity, and quality. If these aspects cannot be assured the part should not be considered for purchase.

A purchaser can ensure the acceptability of a part by insisting on the correct documentation. This documentation should include the following information:

- (a) the country of issue
- (b) the airworthiness authority of the country of issue
- (c) a reference to the approved manufacturing or maintenance organisation the part is sourced from
- (d) a description of the part including as appropriate:
 - (1) the nomenclature
 - (4) the part number
 - (5) the eligibility for use
 - (6) the quantity
 - (7) the serial number or batch number
- (e) the status of the part including:
 - (1) fatigue, cycle, shelf, or overhaul life
 - (2) Airworthiness Directive status
 - (3) compliance or non-compliance with service bulletins
 - (4) the standards to which maintenance has been performed
 - (5) any limitations associated with the part's use
- (f) a certification as to the status of the part and that the part meets the applicable airworthiness requirements.

Documents that, when completed in accordance with the appropriate airworthiness authority's requirements, provide assurance to a purchaser, operator, and installer as to a part's eligibility for installation include, but are not limited to the:

- (a) NZ CAA Form One
- (b) NZ CAA Form Two
- (c) FAA Form 8130-3
- (d) EASA Form 1
- (e) CASA Form 1 (but see section 5.3 below)
- (f) Transport Canada Form One
- (g) an equivalent document issued by an organisation in accordance with the airworthiness requirements of an ICAO Contracting State.

Purchasers are cautioned that the accompanying documents should be carefully assessed for compliance with the requirements of issue. Incorrectly completed forms immediately indicate a possible problem with the part. Suppliers of suspected unacceptable parts often fill in supporting documentation incorrectly in the false belief that incorrect documentation absolves them of any fraudulent actions.

Note: CAA considers that legitimate issuers of authorised release certificates should know how to fill them out correctly. If the form is not filled out correctly, treat the part with suspicion.

It is often difficult to determine the correct use of a form from a country other than the USA, Europe, Canada, or Australia. These authorities provide information on the use of their documents that is readily available. For example, FAA Order 8130-21 details what should and should not be found on the FAA Form 8130-3.

~~Finite life components and other parts that are not accompanied by correct forms from the countries listed above should be passed through a New Zealand-certificated Part 145 organisation to determine the conformity of the item. To determine the conformity of a component, a certificated Part 145 organisation will have procedures in its exposition that should ensure:~~

- ~~(a) the source of the component is appropriate, and that any certification has been made in accordance with the supplier's procedures (this will normally involve direct contact with the supplier)~~
- ~~(b) the records reflect the complete life and history of the component~~
- ~~(c) the component is sufficiently dismantled to confirm its conformity~~
- ~~(d) the CAA Form One is issued correctly.~~

All parts must be manufactured and maintained under controlled conditions, but the ultimate responsibility for parts installed rests with the installer. Purchasers should endeavour to ensure that the parts are acceptable before buying, as no person may subsequently be willing to fit that part to an aircraft. The purchaser should also ensure that the required documentation is available for the installer to be satisfied as to the part's acceptability.

Note: Purchasers should not place installers in the position of accepting responsibility for **the installation of** an unacceptable part.

3.2 Foreign sources

Foreign authorities, such as the FAA, do not approve supply organisations. The FAA in particular actively pursues the unapproved parts suppliers in their country, but without recognised FAA approval, foreign purchasers have little proof of an organisation's reputation. Purchasers should consider that these types of suppliers may look to other countries, such as New Zealand, for customers.

Problems with documentation accompanying parts will normally be addressed and resolved between authorities. The CAA of NZ is actively pursuing suitable agreements with foreign authorities to clarify the requirements regarding acceptable parts.

3.3 Parts purchasing

The most important advice to give to operators purchasing parts is to know their supplier.

When purchasing parts there are several factors to consider. The purchaser should:

- (a) Establish if the supplier is authorised to manufacture or distribute parts they supply.
- (b) Screen a potential supplier, taking into consideration:

(1) The quoted price

- Is the price significantly lower than the price quoted by other suppliers of the same part?

(2) The delivery schedule

- Is the delivery schedule significantly shorter than that of other suppliers of the same part?

(3) Accompanying data

- Can the supplier provide drawings, specifications, overhaul manuals, or substantiating data demonstrating the conformity of the part?

(4) Part approval

- Can the supplier or maintenance organisation provide evidence of approval for the part or organisation?

(5) Unlimited parts

- Have discussions created a perception that an unlimited supply of parts, components, or material are available to the end user?

(c) Check the parts on receipt, taking into consideration:

(1) Packaging

- A visual inspection may indicate that the product container reveals it has come from another supplier's name, is unmarked, or damaged.

(2) Documentation

- A cross check of the purchase order with the delivery receipt for proper part number and serial number.
- A sampling of any certifications made by the supplier to ensure that they are correct and valid.

(3) Limitations

- Check to ensure that any shelf life or equivalent life limitation has not expired.

(4) Visual condition

- Check that the part identification requirements have been met and that serial numbers have not been defaced, removed, or placed in other than normal positions.
 - Check any evidence of visual defects or abnormalities such as surface finish, prior usage, new and old paint together, or corrosion.
 - If receiving a large number of similar items, such as nuts and bolts, an inspection of a sample of the parts may be sufficient.
 - If dealing with expensive or critical components, or establishing a source for ongoing supply, consider visiting the supplier to assure yourself as to the processes that the supplier follows in providing parts.

3.4 Records

Purchasers of parts should require the following records, particularly with life-limited parts, and ensure that they are complete and accurate:

- (a) Records pertaining to the manufacturing, inspection, maintenance, and operation of the part including any certifications made regarding the parts.
- (b) Records of the manufacture of the part showing it was produced under appropriately approved conditions and that it is still in an airworthy condition.
- (c) Records of engines, gear box assemblies, landing gears, instruments, or other parts that show they originally conformed to the type design and have been maintained in accordance with the applicable requirements.

3.5 Life-limited components

All life-limited components should be provided with a set of records that reflect the entire service of that component. The service life should be continuous from new and include the relevant repair information. Life-limited components that do not provide complete service histories are not considered acceptable.

3.6 Salvaged parts

Salvaged parts which have come from aircraft that have been involved in accidents, and rejected parts sold by the manufacturer as scrap metal, are available to purchasers as replacements. Such items may have been subjected to forces or environments which would render them permanently unairworthy.

Purchasers should consider rejecting parts that have been exposed to:

- (a) heat or fire
- (b) foreign or corrosive liquids
- (c) salt water from previously submerged aircraft, and/ or
- (d) excessive inertia forces or impact damage.

A part may not show any signs of distress from these factors, but manufacturers' maintenance manuals usually provide guidance on the serviceability of parts involved in accidents. For example, helicopter accidents involving severe rotor strikes usually render the transmission unserviceable.

3.7 Unsalvageable parts

It is common practice for possessors of aircraft parts to dispose of unsalvageable parts and materials by selling, discarding, or transferring such items. In some instances, these items have reappeared for sale in the aviation community. Misrepresentation of the status of parts and material and the practice of making such items appear serviceable have resulted in the use of unsalvageable non-conforming parts and materials.

Persons disposing of unsalvageable aircraft parts and materials should, when appropriate, mutilate those parts and materials prior to release. Mutilated parts should not be able to be reworked or camouflaged to provide the appearance of being serviceable, but instances of attempts to camouflage or rework mutilated parts have been found in New Zealand.

For example, a rotor blade was found in service that had been mutilated and discarded. The blade had been 'patched', not in a way to ensure its serviceability, but only to hide the mutilation. This practice has significant safety implications and is unacceptable.

All purchasers of aircraft parts and materials should ensure that misrepresented unsalvageable parts and materials are not received. Purchasers should be cautious when receiving parts:

- (a) showing signs of rework, but sold as new
- (b) that are described as new, but are sold with maintenance release tags reflecting a status other than new
- (c) with a significant service history but appearing new
- (d) that have damaged or partly mutilated identifying plates and information
- (e) showing signs of inappropriate repair
- (f) exhibiting poor workmanship or signs of rework in the area of the part number or serial number inscription
- (g) with prices too good to be true
- (h) lacking verifiable documentation of history and approved manufacture or repair, and/ or
- (i) with questionable part numbers or identification markings.

3.8 Surplus parts

Parts are often released as surplus by manufacturers, the military, and suppliers. Parts obtained from surplus sources may be used, provided:

- (a) they meet the standards to which they were manufactured
- (b) they are interchangeable with the original part, and
- (c) they are in compliance with all applicable airworthiness directives.

Purchasers should be aware that surplus parts may not be controlled adequately between the time they are determined to be surplus and when they are disposed of. Records or information for surplus parts should be checked for the actions taken after removal from service. Particular care should be taken to examine storage time and conditions.

3.9 Ex-military parts

Inspection itself is not necessarily sufficient to determine if a military part is interchangeable with a civilian part.

The numbers of ex-military aircraft entering the civilian aviation market continues to increase. The US military, in particular, is releasing increasing numbers of helicopters. Many of these aircraft are outwardly equivalent to the civilian model of the same aircraft and may or may not use the same parts.

Ex-military aircraft can be, and have been, issued civilian TCs or type acceptance certificates when shown to meet the applicable design requirements. In addition, major components and spare parts for these aircraft may be available separately. To make it acceptable for these parts to be used they must have been manufactured and inspected in accordance with civilian requirements.

Special attention should be given to areas that are critical to airworthiness, including:

- (a) major components such as wings, fuselage, landing gear, engine mounts, cowlings, engines, controls and control systems, and instrumentation, and/or
- (b) propellers, rotors, and related parts.

Purchasers of surplus military aircraft and parts should be aware of the civil requirements, and that such aircraft and parts must comply with the civil rule requirements to be acceptable.

Ex-military parts are acceptable on standard category aircraft if they are:

- (a) new or newly overhauled
- (b) traceable to the manufacturer or maintenance organisation
- (c) interchangeable with the civilian part, normally identified in the aircraft manufacturer's manuals, and
- (d) complying with all airworthiness directives applying to the civilian part.

Purchasers should be aware of the following when examining military parts for purchase.

Interchangeability

Inspection itself is not necessarily sufficient to determine if a military part is interchangeable with a civilian part. Military parts that are identical to civilian parts may have different part numbers. Unless the manufacturer is contacted or has provided the appropriate information, and the complete history of the part can be determined back to manufacture, the acceptability of a military part cannot be assured.

Life limitations

Determining the appropriate life remaining for a part is difficult. Military and civilian life limitations may be different, and the in-service use has normally been taken into account when setting the military limitation. Retirement lives are generally listed on the TC data sheet or its accompanying documents and purchasers should examine these limitations before buying a life-limited part.

On standard category aircraft the parts must be new or newly overhauled; that is, the part must be returned to zero life.

On restricted category aircraft, life-limited parts may be used for the remaining time left on the part providing the record of time is clearly reflected in the aircraft log books. The remaining time is calculated from the lesser of:

- (a) the military life limit
- (b) the civilian life limit, or
- (c) the life limit applied by an airworthiness directive to an equivalent civilian aircraft.

The life of a part used on a civilian aircraft can be restricted based upon the number of landings or cycles. Military parts are not always limited in this way. The correct life should be determined:

- (a) from actual service records that reflect the required limit, or
- (b) from a conversion calculation that has been provided by the manufacturer of the part to convert time in service to landings or cycles.

If neither limit can be determined the part is unacceptable.

Operational considerations

Military aircraft are generally operated in conditions and manners considerably different to civilian aircraft. The operational limitations may permit the aircraft to be used beyond the civilian acceptable parameters. When purchasing parts, the previous usage should be determined and assessed. From this determination, by review of records, and detailed non-destructive inspection, parts that have evidence of excessive stress or operation beyond the acceptable civilian limitations, are not acceptable.

Manufacturing considerations

Military parts may not have been manufactured under the same conditions and the materials, specifications, and manufacturing quality may be different to the equivalent civilian part. The differently-produced parts should have different part numbers and are therefore not interchangeable.

Maintenance programmes

During its service life a military aircraft is normally maintained in accordance with a military programme. These programmes may vary the life, time between service, and condition of parts on those aircraft. The military programme may not provide acceptable compliance with the civilian airworthiness requirements.

Modifications and repairs

Modifications and repairs to military aircraft are not required to conform to civilian standards. Purchasers should examine the maintenance records of military parts for modifications and repairs that do not comply with civilian airworthiness requirements. If modifications or repairs exist, design approval of the change by a Part 146 Design Organisation or CAA will be required before the part is used.

Manufacturer out of business

Even when an original manufacturer has ceased production, some parts are available for a given aircraft type for a number of years after its removal from military service. If original-manufacturer fabrication can be substantiated for such parts, they are acceptable providing they comply with all applicable airworthiness directives.

Certain parts are scarce. Occasionally, parties other than the original or approved manufacturer produce these parts illegally and offer them for sale. These parts are unacceptable.

4. Operators

4.1 General

Under rule 91.101, *Aircraft airworthiness*, each operator is responsible for the airworthy condition of their aircraft. This responsibility means that the operator must ensure that all replacement parts meet or exceed original certification standards. The operator must ensure that the required documentation is available for the installer to be satisfied as to a part's acceptability.

Note: *Operators should not place installers in the position of accepting responsibility for an unacceptable part.*

4.2 Parts pooling

Parts pooling is normally only applicable to the larger air transport operators who team with other operators to reduce spares holdings or make more efficient use of common spares systems.

Parts pooling systems must be detailed in the operator's exposition and provide for:

- (a) initial inspection of the parts pooling facilities
- (b) continued inspection of the parts pooling facilities
- (c) parts pooling facilities to only perform work in accordance with the operator's manuals, and
- (d) the identification of the sources of parts entering the system.

When using parts pooling facilities operators should consider the variances, if any, of overhaul times and lives of parts between operators using the pool. The operators must ensure that their exposition is followed when applying service lives.

5. Installers

5.1 General

Rule 43.53 specifies that each person performing maintenance on an aircraft or aircraft component (the 'installer'):

- (a) use acceptable methods, techniques, and practices
- (b) use materials, parts, and appliances in accordance with the requirements of Part 21 Subpart K, *Materials, Parts, Processes, and Appliances*, and
- (c) restore the aircraft or aircraft component to its original or properly modified condition.

Where an operator is responsible for the airworthiness of an aircraft, it is ultimately the installer that decides to fit a part. The installer, normally a licensed aircraft maintenance engineer, must ensure that the part is appropriate for the aircraft onto which it is to be fitted.

5.2 Determining eligibility

The installer should determine the eligibility of the part by:

- (a) determining the correct description for the part from:
 - (1) the approved type design
 - (2) the manufacturer's parts catalogue
 - (3) the TC data sheet or equivalent document issued by an airworthiness authority
 - (4) ATD that is current and applicable to the type design, and
 - (5) a certified statement on the accompanying documentation that states what the part is, or if it is an approved substitute, and
- (b) ensuring that the description of the part as marked on the part, its container, or the accompanying documentation, is identical to the correct description determined above, and

- (c) ensuring that the traceability of the part provides for determining the part's conformity with ATD.

Note: *The existence of release documentation alone does not automatically constitute authority to install the part.*

In accordance with Part 21 Appendix D, the installer must ensure that the part is to the required design and modification standard for fitment. Inspection alone may not provide this assurance, so documentation should be assessed to ensure compliance with manufacturing or maintenance quality standards, airworthiness directives, and life limitations. Whenever the current status of life-limited parts cannot be established and the historical records are not available, the airworthiness of that part cannot be determined, and it must be removed from service.

The part must be able to be traced back to the manufacturer or certificated maintenance organisation that performed work on the part. If this traceability cannot be determined the part must be considered unacceptable.

Correct documentation is normally the only mechanism for an installer to assess the history of a part. Documents that, when completed in accordance with the appropriate airworthiness authority's requirements, provide assurance to an installer as to a part's eligibility for installation include, but are not limited to the:

- (a) NZ CAA Form One
- (b) NZ CAA Form Two
- (c) FAA Form 8130-3
- (d) EASA Form 1
- (e) CASA Form 1 (but see section 5.3 below)
- (f) Transport Canada Form One
- (g) an equivalent document issued by an organisation in accordance with the airworthiness requirements of an ICAO Contracting State.

Note 1: *In the case of NZCAA Form Two, as outlined in rule 43.54, Maintenance required under Part 145, maintenance which must be carried out by a Part 145-certificated organisation cannot be certified for release to service using a CAA Form Two. Parts to be installed on an aircraft which must be maintained by a Part 145-certificated organisation IAW rule 43.54 must be accompanied by an appropriate document, not a CAA Form Two.*

Particular note should be taken of serial numbers of serialised items and a comparison made with the physical identification on the item. If a serialised item is not identified with the genuine manufacturer's data plate or other markings, then:

- (a) the item should not be used, or
- (b) the manufacturer of the item should be contacted for advice.

Installers are cautioned that the accompanying documents should be carefully assessed for compliance with the requirements of issue. Incorrectly completed forms immediately indicate a possible problem with the part. Suppliers of suspected unacceptable parts often fill in supporting documentation incorrectly in the false belief that incorrect documentation absolves them of any fraudulent actions.

Note: CAA considers that legitimate issuers of authorised release certificates should know how to fill them out correctly. If the form is not filled out correctly, suspect the part.

Other documentation should be carefully assessed for the required information to reflect a part acceptance for use. The responsibility for the use of a part that is not accompanied with one of the above documents is firmly with the installer. The reliance on the certification of an unapproved organisation does not absolve the installer of the responsibility for the use of a part subsequently found to be unacceptable.

5.3 Conformity

Finite life components and other parts that are not accompanied by correct forms from the countries listed above should be passed through a New Zealand-certificated Part 145 organisation to determine the conformity of the item. In order to certify conformity of a component, a Part 145-certificated organisation will have procedures in its exposition which will ensure:

- (a) the source of the component is appropriate, and that any certification has been made in accordance with the supplier's procedures (this will normally involve direct contact with the supplier)
- (b) the records reflect the complete life and history of the component
- (c) the component is sufficiently dismantled to confirm its conformity
- (d) the CAA Form One is issued correctly.

Only a New Zealand Part 145 Certificated Maintenance Organisation can complete a conformity assessment of a component or part and issue a NZCAA Form One.

5.4 Eligibility of CASA Form 1 for CAANZ-registered aircraft

A CASA certificate of approval (COA) under Regulation 30 of CASA CAR 1988 for maintenance on aircraft components or aircraft materials, allows the holder to issue a CASA Form 1. A COA holding organisation is not equivalent to a CASA Part 145-certificated organisation, however, nor are they equivalent to a CAANZ Part 145 certificate-holding organisation.

Because of this, a *CASA Authorised Release Certificate (CASA Form 1)*, where the issuer selects:

- Regulation 42WA of CAR 1988- Return to service (for Part4A maintenance under CAR 1988) in block 14a.

should not be seen as equivalent to a CAA Form One issued under a CAANZ Part 145 Certificate. Parts accompanied by a CASA Form 1 issued under 42WA of CAR 1988 are not considered eligible for installation on a New Zealand-registered aircraft used to conduct air transport operations.

6. Disposal of Parts

In some instances parts that are damaged or life expired must be disposed of. It is in the interests of the industry as a whole to ensure that these parts do not re-enter the aviation system.

Actions taken to dispose of parts must ensure that under no circumstances can the part be restored. When appropriate the parts should be mutilated in such a manner that the parts become unusable for their original intended use. Mutilated parts should not be able to be reworked or camouflaged to provide the appearance of being serviceable, including actions such

as replating, shortening and rethreading long bolts, welding, straightening, machining, cleaning, polishing, or repainting.

Caution should be exercised to ensure that the following types of parts and materials are disposed of in a manner that does not allow them to be returned to service:

- (a) Parts with non-repairable defects, particularly those not visible to the naked eye.
- (b) Parts that are not within the specifications set forth by the approved design and cannot be brought into conformance with applicable specifications.
- (c) Parts and materials for which further processing or rework cannot make them eligible for use.
- (d) Parts subjected to unapproved modification or rework that is irreversible.
- (e) Life-limited parts that have reached or exceeded their life limits or have missing or incomplete records.

Note: *In some cases, part manufacturers may extend life limitations. In these cases, parts that are close to their life limits that have been removed from service may be eligible for further use. The installer must ensure that they have been appropriately stored, meet the manufacturer's criteria for life extension, and have accurate part identification and records.*

- (f) Parts that cannot be returned to airworthy condition due to exposure to extreme forces or heat.
- (g) Principal structural elements (PSE) being removed from a high cycle aircraft for which conformity cannot be accomplished.