

Approved [Maintenance] Data

In the non airline sector, the majority of aircraft hold FAA Type Certificates and one would expect that the Australian aviation regulatory system would require these aircraft to be maintained to the same standards as they are in the USA. There is a marked difference between the Australian maintenance data system and the FAA system. Where our system concentrates on ensuring any maintenance is done iaw ‘approved maintenance data’, the US system concentrates in ensuring that any maintenance maintains the aircraft in an airworthy conditions using either or both approved data or data acceptable to the Administrator. There are numerous FAA documents (e.g. FAA Order 8901, Vol 4, Chapter 9) that prescribe the FAA difference between “**approved**” and “**acceptable**”. The FAA does not ‘approve’ certain maintenance instructions as they leave the responsibility to the A&P mechanic and IA to determine the data that would be acceptable to the Administrator – if in doubt, they would confer with FAA, DER and/or DAR to determine the data acceptable.

FAR43.13. “*shall use the methods, techniques, and practices prescribed in the current manufacturer's maintenance manual or Instructions for Continued Airworthiness prepared by its manufacturer, or other methods, techniques, and practices acceptable to the Administrator...*”

(b) *Each person maintaining or altering, or performing preventive maintenance, shall do that work in such a manner and use materials of such a quality, that the condition of the aircraft, airframe, aircraft engine, propeller, or appliance worked on will be at least equal to its original or properly altered condition (with regard to aerodynamic function, structural strength, resistance to vibration and deterioration, and other qualities affecting airworthiness). (in other words – keep the aircraft safe)*

The FAR’s ultimate aim is to ensure the aircraft is airworthy whilst the CA[S]R’s is primarily concerned with doing maintenance iaw “approved maintenance data”. This approach would be acceptable if the regulations also included as approved “data acceptable to the FAA Administrator” but this isn’t done. Lack of real clarity on what our legal terminology means has, from time to time, become an issue between industry and CASA.

For example, older Part 23 aircraft manufacturer’s had more confidence in the skills of the maintainer and very brief maintenance data was promulgated due to the skills of the artisan (maintainer). For those that have been employed in GA, the skills passed down from one generation to the next are crucial to keep aircraft maintained in an airworthy condition. How many times have ex airline, military or large aircraft maintainers crossing into smaller GA aircraft maintenance, found it hard to fathom the maintenance instructions unless they have been mentored in the methods and techniques required to return the aircraft to an airworthy state. It is so different in airline maintenance which relies on step by step detailed work instructions so the company can be confident that they will not be liable if an incident happens. Even when defects happen on the ‘line’, airlines have back-up maintenance support so their aircraft remain compliant and in-service, even with defects (MELs, etc).

The non airline maintenance worker does not have this support or detailed maintenance instructions and has to make decisions and determinations that leave the aircraft airworthy, serviceable and compliant using skills and, to some degree, common sense. However, does the non airline worker really understand the aviation regulatory system associated with the methods, techniques, practices and data they use to do the maintenance?

The data sufficient to do the task is really based on the experience and mentoring that an AME or LAME has had.

CAR 42V Maintenance: approved maintenance data. This regulation clearly states that all maintenance must be done to ‘approved data’ and references CAR 2A.

CAR Definition: Maintenance Instruction means an instruction that is issued by [listed sources including manufacturers] but does not include an instruction issued by a manufacturer or designer if it is clear from the terms of the instruction that the manufacturer or designer regards compliance with the instruction as “optional”.

- This is confusing as some manufacturer’s instructions may be optional if certain maintenance is optional but this “FAA acceptable data” would require ‘**approval**’ of this manufacturer’s instruction if the optional maintenance was carried out.
- Outcome of this rule is to discourage optional maintenance being incorporated that may improve reliability simply because it is classified as ‘optional’ – it cost to have it “approved” but is “acceptable” in the USA.

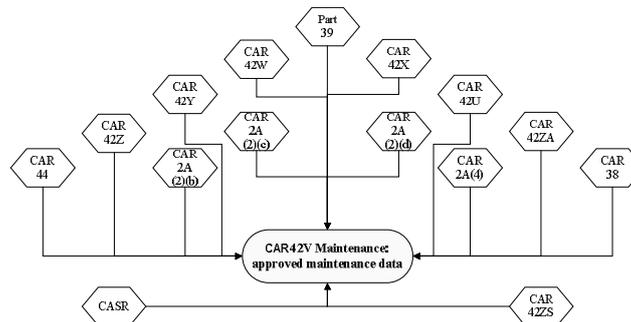
The other difference between the US and Australian system is that the FAA treat minor repairs and alterations quite differently to major repairs and modifications. Ever since minor repairs and modifications carried out by the LAME were removed from the legislation in 1992, the increased costs for “approval” of all such modifications and repairs have impacted on the viability of this sector.

Understanding which maintenance instruction and data can be used is becoming more confusing when persons without any applicable experience start to read data that really needs very experienced LAMEs mentoring to understand.

Only one regulation addresses approved and acceptable data in FAR Part 43.

So what is deemed as “approved maintenance data” under CAR2A?

- a) CAR 2A(2)(a)
 - i. Part 39 – AD instructions
 - ii. CAR 42U - Modifications and repairs: approved designs
 - iii. CAR 42W – Installation and use of aircraft components in maintenance — Australian aircraft in Australian territory
 - iv. CAR 42X – Use of aircraft materials in maintenance — Australian aircraft in Australian territory
 - v. CAR 42Y – Time-lifed aircraft components — exemption from supply under cover of document requirements
 - vi. CAR 42Z – Removable items of radio communications equipment in VFR aircraft — exemption from certification requirements
 - vii. CAR 42ZA – Use of aircraft components, aircraft materials etc in maintenance — Australian aircraft outside Australian territory
 - a) Including instruments made under the above regulatory provisions
 - viii. ~~CAR 25~~ – deleted in 1995
 - ix. CAR 38 – Maintenance directions
 - x. CAR 44 – Conditions with respect to maintenance releases
- b) CAR 2A (2)(b) documents or designs approved under another provision of these Regulations
- c) CAR 2A (2)(c) instructions issued by the manufacturers of aircraft, aircraft components or aircraft materials
- d) CAR 2A (2)(d) instructions issued by the designers of modifications of aircraft or aircraft components
 - i. Unless CASA has deemed para (b), (c) or (d) instruction as deficient in writing.
 - ii. If CASA has not deemed a manufacturer’s instruction is deficient in writing then the instruction must be assumed as being approved.
- e) CAR 2A (2)(e) any other instructions, approved by CASA under subregulation (4)
- f) CAR 2A (3) Power for CASA to determine instructions deficient in writing.
- g) CAR 2A (4) enables CASA to approve additional instructions. This provision enables additional new instructions to be ‘approved’ when the above instructions do not address a maintenance task. Some ‘FAA acceptable’ instructions under the FARs may need CAR 2A (4) approval.



What a complicated regulatory framework, each of these regulations have provisions which, 20 years after making, still create discussions due to lack of clarity that would enable unquestionable compliance with all these provisions as well as ‘instruments’ that have been raised under the regulatory provisions listed above.

The deficiencies [lack of clarity] with the current system is not recognising FAA acceptable data generally or a simple process addressing minor repairs and modifications in the same manner as the system in the US, but the complexity and lack of clarity these regulations create and they also have criminal provisions attached.

AMOs were encouraged to contact the manufacturers directly for clarification of manufacturer’s promulgated data and any instruction, in whatever format received, was treated as additional maintenance instructions. In addition, experienced LAMEs understood what and how maintenance had to be performed based on the past & current interaction with the manufacturers of aircraft and components.

But the legislation is now fraught with danger when inexperienced LAMEs or CASA AWIs review maintenance data they are not experienced with and determine that the instructions are deficient even though experienced LAMEs have been safely applying these instructions for years. Too often CASA state the data is not explicit enough but the LAME does not receive a written determination declaring the instructions deficient from CASA.

Legislation also requires CASA to be compliant with their regulatory responsibilities just as much as industry has to be compliant. Too often members raise concern that the local CASA Office will give an opinion that the maintenance data they have used or intend to use is deficient but not give a CAR2A(3) written direction that the instruction is deficient.

Many in CASA and industry do not understand the purpose of regulatory provisions or how they should be applied.

Many continue to re-define the intent of regulatory provisions to add bureaucracy not safety.

There are a few regulatory provisions that need explanation.

- 1) Lack of any “instructions” to carry out the maintenance task in the opinion of the maintainer.
 - a) If there is no instruction to do the maintenance that complies with any of the regulations listed, you are obliged to have instructions created and submit to CASA for approval under CAR2A(4).
 - b) This would also apply if CASA has determined in writing (CAR 2A (3)) that an instruction is deficient. Deficient means it lacks clarity to perform the maintenance task.
- 2) **A variation or exemption** to any of the following “instructions” relating to **what, when or how** maintenance is done included in regulation 36A, 39, 41, 42G, 42U, 42V, 42W, 42X, 42Y, 42Z or 42ZA; or a related document.
 - a) A ‘related document’ means a document that is:
 - i) a direction issued by CASA under regulation 38 or 44, or a direction in force under sub-regulation 202.051(3) of CASR; or
 - ii) a **document or design** that:
 - (1) was approved under regulation 35; or
 - (2) forms part of a certificate of type approval [TCDS]; or
 - (3) issued by the manufacturer of an aircraft component; or aircraft material; or
 - (4) issued by the designer of a modification of an aircraft or aircraft component;**has to be approved by CASA or an Authorised Person under CAR42ZS.**
 - b) Surprising, only the registered operator (RO) may apply for a variation or exemption to approved maintenance data.
 - c) This demonstrates confusing and conflicting regulations when it is the AMO that has to have a (current) technical library to do the maintenance task but only the AMO’s customer (RO) can apply for an exemption or variation to this data.

How does a small AMO that is fully committed to maintaining aircraft safely come to understand how each of the provisions in the regulations listed above affects the day-by-day operation of general aviation maintenance?

The confusion with these provisions was identified during industry/CASA consultations in the late 1990s, including responsibilities placed on the RO instead of the AMO. Australian aviation legislation is more aligned at apportioning blame on a person instead of being associated with keeping an aircraft in an airworthy and serviceable condition. In summary, unlike the FAA system which only needs 13 regulations and 6 schedules to provide all the regulations that are required to keep maintenance compliant – we have more than 13 regulations just to do with “approved data”.

FAA National Specialist; Bill O'Brien: “If you permit me to wax metaphorically, Part 43, Maintenance, Preventive Maintenance, Rebuilding and Alteration, is one of the three core regulations or foundation stones that set the standards for our aviation industry. The other two are Part 21, Certification Procedures for Products and Parts, and Part 91 General Operating and Flight Rules. These three rules achieved “star status” because they are the only regulations identified on the FAA Form 8100-2 Standard Airworthiness Certificate. But star status aside, what is even more amazing is the fact that Part 43 contains only 13 rules and six appendixes. That is all the regulation it takes to set the airworthiness maintenance requirements for performing work on 185,000 U.S.-registered aircraft.”

Now to the rule! FAR 43.13 contains three paragraphs. Paragraph (a) contains two requirements. The first requirement for a person performing maintenance on an aircraft or appliance is that they “shall” use the methods, techniques, and practices prescribed in the current manufacturer’s maintenance manual or Instructions for Continued Airworthiness prepared by the manufacturer, or other methods, techniques, and practices acceptable to the Administrator, except as noted in section 43.16. Note that the first paragraph sets the tone for the rule. It uses the word “shall.” This is a word with hair on its chest because “shall” is used as an imperative and not in the permissive sense as in words like “should” or “may.” So the rule requires the mechanic to have current data from the manufacturer or other data acceptable to the Administrator. This reference to other acceptable data allows the mechanic to use data similar to FAA AC 43.13-1B and 2A to work on older aircraft like J3-cubs, and 7 AC Aeroncas that never had a manufacturer’s maintenance manual. The rule’s one exception speaks to section 43.16 Airworthiness Limitations. This rule allows a mechanic to perform maintenance that is called out in an air carrier’s FAA approved operations limitations or an inspection program approved under section 91.409(e).”

<http://www.aviationpros.com/article/10386541/part-43-our-rule-written-by-mechanics-for-mechanics>

FAR Part 43 has been around with minimal changes for over 50 years and, once CASR Part 21 adopted FAR Part 21, Part 43 adoption would have benefited the industry but Byron’s EU direction took away confidence of change.

Compared with the confusion caused by the myriad of regulations and instruments that now apply in aviation, it is no wonder that, from time to time, confusion is raised regarding the data being used to perform maintenance.

AMROBA has asked CASA to define what a manufacturer’s instruction – i.e. their legal interpretation of the term.

We also alert industry to the need to have CASA approve any instruction how maintenance is to be carried out when there are NO such instructions. There are aircraft that have no manuals or very limited manuals.

As experience is gained in performing individual tasks, there are methods and techniques that are used to do the maintenance that may be refined over time. At what time does it require application for a variation or exemption to maintenance data so that a more practical method can be applied? Maybe CASR Part 21M may be the answer.