



AIRWORTHINESS BULLETIN

Compliance with Cessna Supplemental Inspection Documents (SIDs)

AWB 02-048 Issue 5

Date: 24 June 2016

1. Effectivity

All Cessna 100, 200, 300 and 400 series aircraft.

2. Purpose

This is an explanatory document for all owners, registered operators and maintainers of Cessna aircraft for the requirement to comply with Cessna Supplemental Inspection Documents (SIDs), to ensure the continued airworthiness of the affected Cessna aircraft.

“The function of the Supplemental Structural Inspection Program is to find damage from fatigue, overload or corrosion through the use of the Nondestructive Inspections (NDI) and visual inspections. The Supplemental Inspection Document (SID) is only for primary and secondary airframe components. Engine, electrical items and primary and secondary systems are not included in the SIDs document”.

This Airworthiness Bulletin should be read in combination with [Aviation Ruling 01/2014](#) – Compliance with Supplemental Inspection Documents (dated 18 December 2015).

3. Updates since initial issue

The changes to this AWB from previous issues are to advise that:

- Exemption instrument [CASA EX 96/16](#) has been published to allow extension for 100 series in private category to go beyond the 30 June 2016 compliance date under certain conditions and with a “compliance plan” and owner commitment to achieve SIDs compliance by 30 June 2018.
- Exemption Instrument number [CASA EX 98/16](#) has also been published. This Instrument gives exemption from compliance with the following;
 - Service Bulletin SEB03-1 or SB 02-55-01 “Elevator Rivet Installation” as referenced in Supplemental Inspection Document SID 55-10-01;
 - Service Bulletin SEB 05-2 “Fuselage skin & Fuel Step reinforcement” as referenced in SID 53-12-01;
 - Service Bulletin SE84-15 (Service Kit SK182-84) “Shimmy Dampener Installation Improvement”;
 - Any SID task for the aircraft Landing Gear with Supplemental Inspection Numbers beginning with “32-”- (ATA32). Conditions apply in the instrument



- In relation to compliance with all other Cessna Service Bulletins, the Aviation Ruling is intended to ensure compliance with those Service Bulletins related to the structural integrity of Principal Structural Elements (PSEs). Any service bulletin called up in a SID requirement for a non-PSE is not considered mandatory by CASA.
- Although highly recommended, CASA does not consider landing gear and attachments to be PSEs for the purposes of compliance with the SIDs. This was a deliberate action intended to provide a measure of relief to industry (Exemption instrument EX98/16 gives authorisation).
- Modification kits mentioned in SIDs are not required unless defects are found that require rectification or as a terminating action to repetitive inspections.
- Where an existing Airworthiness Directive overlaps with a SID inspection, the AD takes precedence.

4. Interpreting the SIDs documents for your aircraft

The Cessna SID inspection document is an extensive document that requires research to extract the applicable individual SID inspections and intervals for each relevant aircraft.

The requirement to undertake a SID inspection is triggered whenever an applicable Total Time In Service threshold i.e. 10,000 hours, or a calendar based threshold i.e. 20 years has been reached – whichever occurs first.

The SIDs document explains how to identify the aircraft's operating environment and operating usage to correctly determine the inspection program necessary. Some aircraft will need to follow the inspection interval for SEVERE and others for MILD/MODERATE.

Some of the SIDs use the figure of 12,000 flight hours (as an example) as the threshold for beginning the "detailed inspection" which calls for the NDT (typically Eddy Current) procedures. Therefore any aircraft beyond 12,000 flight hours must have these NDT inspections completed within the CASA compliance period.

Additionally some of the SIDs start with statements;

'Review the aircraft records to determine if SK172-147 to the forward cabin doorpost has been installed. If SK172-147 has been installed, this inspection is complete'

Where statements like this exist the intent is that the visual inspections must be done and continued until the Service Kit (SK) or approved alternative is fitted. In most cases the SK also becomes the approved method of repairing the structure where cracks or defects are found.

Therefore the SK is only required when:

- cracking or defects are found, or
- as terminating action for the repetitive inspections (in this case each 1,000 hours/3 years).



CASA does not expect aircraft that are awaiting service kits to be grounded until the service kit arrives, unless the damage/cracking is to the extent that requires rectification/repair.

Compliance Table (updated)

Aircraft Series	Operational Category	Compliance Date
300 400	All	31 December 2014
200	Aerial Work/Charter	31 July 2015
200 100	Private Aerial Work/Charter	31 March 2016
100	Private	30 June 2016 Can now be extended via the provisions of Instrument EX96/16

5. In “Plain English” the CASA Exemption Instrument EX96/16 has the following conditions in Schedule 1:

- 1) On or before 30 June 2016 or before further flight:
 - a) From the maintenance records or, if necessary, by inspection find out what SIDs tasks and structural inspections have been previously performed and what tasks are still outstanding (determine the scope of work/rectification required to be SIDs compliant).
 - b) After completing (a) it should be clear whether or not that the aircraft’s PSEs for wings and empennage have been visually inspected, either in accordance with the SIDs visual inspections or in accordance with the applicable Maintenance Schedule for the aircraft at its most recent periodic/ 100 hourly inspection. If for any reason, this cannot be confirmed, or the current LAME is not confident with the previous work done or the actual aircraft’s condition, then the visual PSE inspections must be done before further flight after 30 June.
 - c) Develop a written SIDs compliance plan (the compliance plan), on the advice of the certifying LAME, that requires all applicable SIDs requirements to be completed by 30 June 2018. This compliance plan can be as simple as a couple of lines in the Log Book Statement taking into account the following details;
 - Include a statement that ‘The SIDs inspections must be initiated at the next annual/100hrly inspection after 30 June 2016 and completed by 30 June 2018’, and



- If required, factor-in acceptable timeframes for the ordering of necessary components as well as programming NDT specialists, and
- Be signed by the holder of the certificate of registration for the aircraft and entered into the aircraft's Log Book Statement Part 1 or Part 2 (CASA Form 942, 958, or equivalent), and
- Be submitted to CASA (at the closest Regional Office) for inclusion on the individual aircraft file.

6. Corrosion Prevention and Control Program (CPCP)

The SID document contains inspections for corrosion and fatigue, including the Cessna CPCP, however, there is flexibility in the way in which each operator implements the CPCP program for their aircraft in relation to SIDs compliance. The program can be adjusted for the aircraft operating environment and maintenance schedule.

The CPCP "baseline program" contained with the SIDs documents provides a good starting point and actually gives some credit towards the ongoing (repeat) SIDs intervals that have calendar time specified. Read Note 1 in section 2A-14-00 of SIDs document for details.

7. Cessna SIDs compliance Plan - Example words for Log Book Statement:

In accordance with all the requirements contained in Schedule 1 of CASA Instrument EX96/16, this aircraft is approved for SIDs extension beyond 30 June 2016.

The aircraft's log book entry dated _____, and certified by _____ (LAME/Maintenance Org), for the previous 100 hourly/annual inspection, or last maintenance visit, confirms that the aircraft's primary structure for wings and empennage was sufficiently inspected to a point where the aircraft is structurally safe to operate.

The initial Cessna SID inspections as per Section 2A of the Cessna _____ (model) aircraft maintenance manual, PN _____ dated _____ will be initiated, or continued, at the next Annual/100Hrly inspection which is due at _____ (MR Expiry).

All remaining Cessna SID inspections must be completed prior to 30 June 2018.

Thereafter comply with, as required, Cessna Corrosion Prevention and Control Program (CPCP) and Cessna SID's (for REPEAT compliance) requirements.

I, _____, being the registered owner responsible for VH-_____ confirm that I have read and understood the SIDs extension requirements as per CASA Instrument EX96/16 for this aircraft

Signed _____ ARN _____

Dated _____



8. Log Book Statement Part 1 and/or Part 2

The requirement to undertake the SIDs should be written in the Log Book Statement Part 1 or Part 2 (CASA Form 925/942/958 or equivalent) by the Registered Operator and as per the requirements and conditions of CASA instrument EX96/16 for those on SIDs extension (compliance plan).

9. Applying for other exemptions

If you wish to apply for further exemption or variation from full compliance with the SIDs please make applications to the Manager Continuing Airworthiness using the AirworthinessBulletin@casa.gov.au inbox or contacting your local CASA office.

The application should include:

- The applicant's contact details and ARN.
- Aircraft details including total time in service (TTIS) hours and copy of current Maintenance Release (MR).
- Details of which particular SID task the request covers
- Details of how the applicant proposes to meet the safety requirement of the SID or reasons why they cannot comply with the particular SID requirements
- Details of any restoration work recently carried out.

For any exemptions or variations from compliance with the technical data contained in the applicable SIDs, CASA recommends the engagement of a CASR 21.M Authorised Person to provide engineering justification. This includes any adaptation of the SIDs requirements to take into account pre-existing, non-Cessna approved modifications, Supplemental Type Certificates (STCs) or repairs.

CASA will only approve applications which demonstrate at least an equivalent level of safety to the SIDs document. The application may be subject to CASA cost recovery action.

For requests to extend compliance times or an inspection interval as a "one off" request, CASA will consider providing that;

- The MRO/LAME is in agreement and willing to make a statement that the aircraft is in an airworthy condition for structural integrity, and
- The inspection/ replacement interval is not defined in the manual as being airworthiness limitations, and
- No damage/corrosion or defects are found in the relevant area by visual inspection.



10. Background to SIDs

Every aircraft, Cessna or otherwise, ages from its day of manufacture. However, the rate an individual aircraft ages depends on how that particular aircraft has been operated, maintained and stored over its life. Every aircraft will age in a unique manner depending on its own circumstances.



Centre Rudder Hinge Mount Corrosion

Older aircraft (the average age of the Australian piston engine aircraft fleet is approximately 40 years), were built to the design, certification and maintenance standards applicable at the time. Many individual aircraft have now been operated well beyond the manufacturer's original design service goals.

In many cases limitations existed in the fatigue life assessments, corrosion protection coatings, production methods and anticipated operational profiles and roles for the aircraft produced, particularly in relation to General Aviation (GA) aircraft.

These older aircraft are not necessarily unsafe (chronological age of an aircraft is only one factor impacting the airworthiness of an aircraft), however, this is provisional on the maintenance program being adapted to take into account the ageing process of that aircraft over time.



Cessna 172 Channel Splice

As a result of the growing concern of the safety of their increasingly ageing fleet, Cessna and the Federal Aviation Administration (FAA) commenced work on the SIDs Development Program for their products in the late 1990s. Comprehensive engineering studies were conducted by Cessna and the US Department of Transport commencing with the Cessna Model 402¹.

These studies, progressively undertaken across all Cessna piston engine aircraft, were based on operational data and feedback surveys from the world-wide aircraft fleet, including that of defect reports, service-life simulations of actual flight profiles and feedback from operators, owners and National Aviation Authorities (NAAs).

The investigations identified critical areas of Principal Structural Elements (PSEs) on the aircraft that have been proven, through service-life experience, to be susceptible to fatigue or corrosion damage. In some cases these PSEs have not been seen, disassembled or inspected since the aircraft was manufactured as long as 40 years ago or more.

The SIDs programs provide an inspection regime to ensure the structural integrity of the airframe is maintained. These supplemental inspections complement those inspections undertaken during existing scheduled maintenance activities.

In addition, the SIDs also introduce fixed retirement lives for each aircraft model series, beyond which the continued airworthiness of the aircraft can no longer be assured (refer to the applicable SIDs document for the particular Cessna model).

1. DOT/FAA/AR-98/66 Supplemental Inspection Document Development Program for the Cessna Model 402



11. Ongoing Requirements for SIDs compliance

The requirement to undertake the Cessna SIDs includes “Repeat” inspection intervals. The SIDs program applies irrespective of the category of operation or the elected maintenance schedule for the aircraft:

- CAR 42A Manufacturer’s Maintenance Schedule,
- CAR 42B CASA Maintenance Schedule (Schedule 5), or
- CAR 42C Approved System of Maintenance.

PSE components can be classified in the following manner:

- The component contributes significantly to carrying flight and ground loads *, and
- If the component fails, it can result in catastrophic loss of the airframe.

Typical examples of PSEs (from SIDs document section 2A-13-00) include:

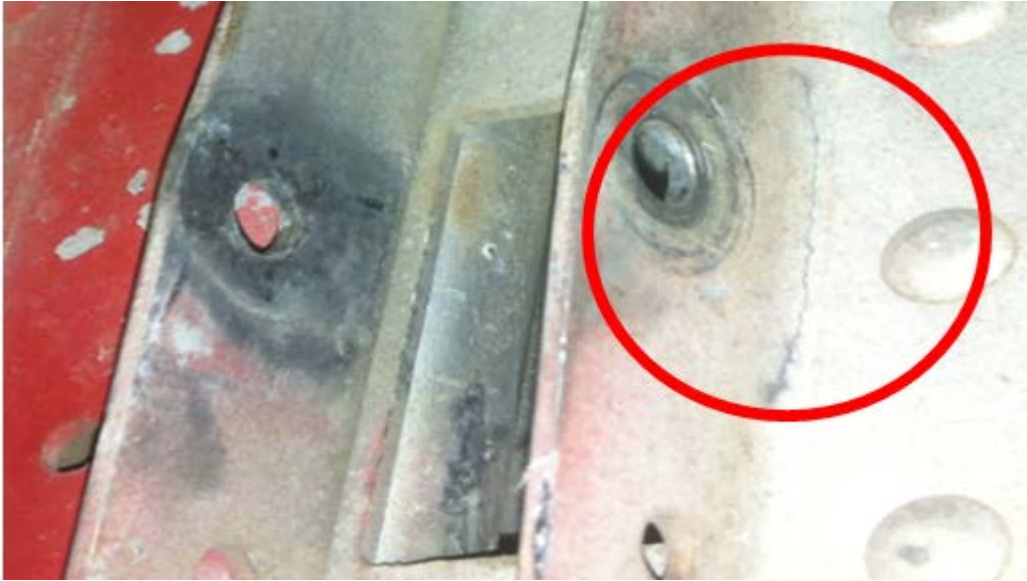
Wing and empennage:

- Control surfaces, flaps and their mechanical systems and attachments (hinges, tracks and fittings),
- Primary fittings,
- Principal splices,
- Skin or reinforcement around cut-outs or discontinuities,
- Skin-stringer combinations,
- Spar caps, and
- Spar webs.

Fuselage:

- Circumferential frames and adjacent skin,
- Door frames,
- Pilot window posts,
- Bulkheads,
- Skin and single frame or stiffener element around a cut-out,
- Skin and/or skin splices under circumferential loads,
- Skin or skin splices under fore and aft loads,
- Skin around a cut-out,
- Skin and stiffener combinations under fore-and-aft loads,
- Door skins, frames and latches, and
- Window frames.
- Engine support structure and mounts.

* Although highly recommended, CASA does not consider landing gear and attachments to be PSE for the purposes of compliance with the SIDs. This was a deliberate action intended to provide a measure of relief to industry.



Cessna 177RG Stabiliser Balance Arm Brackets

For aircraft that have been modified or repaired in a manner different to the Cessna SBs/Service Kits, the engagement of a CASR 21.M Authorised Person may be required to ensure that the impact of any changes to the aircraft's original design and on the ability to comply with the SIDs are considered and appropriately addressed.

The requirement for ageing aircraft programs such as the SIDs for GA fleets is not constrained to Cessna products. However, Cessna is one of the few GA manufacturers to have developed this ageing aircraft initiative to such a comprehensive extent.



Cessna 152 vertical fin corroded under the skin of the fairing



Cessna 172 Horizontal Stabilizer Front Spar Cracking

12. Certifying for SIDs compliance and defect reporting

Final certification for the completion of each required SID inspection task together with any rectifications/repairs carried out is required to be made in the Aircraft Maintenance Log Book (CASA Form 924 or equivalent).

Any significant damage or corrosion discovered during the SIDs inspections or repairs should be reported to CASA and to Cessna.

It is a requirement under CAR 51 and CAR 51A for the Registered Operator and/or those engaged in the aircraft maintenance to report defects to CASA. CAAP 51-1 provides further details on Defect Reporting.



Cessna 182H Flap Well Rib

13. Enquiries

Enquiries with regard to the content of this Airworthiness Bulletin should be made via the direct link e-mail address:

AirworthinessBulletin@casa.gov.au

or in writing, to:

Airworthiness and Engineering Standards Branch
Standards Division
Civil Aviation Safety Authority
GPO Box 2005, Canberra, ACT, 260