Cessna
A Textron Company

TEMPORARY REVISION NUMBER 10

DATED 1 DECEMBER 2011

MANUAL TITLE	Model 177RG Series 1976 Thru 1978 Service Manual
MANUAL NUMBER - PAPER COPY	D2009-4-13
TEMPORARY REVISION NUMBER	D2009-4TR10

MANUAL DATE 1 October 1975 **REVISION NUMBER** 4 **DATE** 2 October 1995

This Temporary Revision consists of the following pages, which affect and replace existing pages in the paper copy.

SECTION	PAGE	SECTION	PAGE
2A-10-00	1 Thru 5	2A-12-27	1
2A-10-01	1 Thru 8	2A-12-28	1
2A-12-01	1	2A-12-29	1
2A-12-02	1	2A-13-00	1 Thru 8
2A-12-03	1 Thru 2	2A-13-01	1 Thru 23
2A-12-04	1 Thru 2	2A-14-00	1 Thru 3
2A-12-05	1	2A-14-01	1 Thru 2
2A-12-06	1 Thru 2	2A-14-02	1 Thru 2
2A-12-07	1	2A-14-03	1 Thru 2
2A-12-08	1 Thru 2	2A-14-04	1 Thru 3
2A-12-09	1	2A-14-05	1 Thru 2
2A-12-10	1	2A-14-06	1 Thru 2
2A-12-11	1	2A-14-07	1 Thru 2
2A-12-12	1	2A-14-08	1 Thru 2
2A-12-13	1	2A-14-09	1 Thru 2
2A-12-14	1	2A-14-10	1 Thru 3
2A-12-15	1	2A-14-11	1 Thru 2
2A-12-16	1	2A-14-12	1 Thru 6
2A-12-17	1	2A-14-13	1 Thru 5
2A-12-18	1	2A-14-14	1 Thru 2
2A-12-19	1	2A-14-15	1 Thru 2
2A-12-20	1	2A-14-16	1

© Cessna Aircraft Company

SECTION	PAGE	SECTION	PAGE
2A-12-21	1	2A-14-17	1 Thru 3
2A-12-22	1	2A-14-18	1 Thru 2
2A-12-23	1	2A-14-19	1 Thru 2
2A-12-24	1	2A-14-20	1 Thru 3
2A-12-25	1	2A-20-01	1 Thru 6
2A-12-26	1	2A-30-00	1 Thru 21
		2A-30-01	1 Thru 12

REASON FOR TEMPORARY REVISION

1. To add the Supplemental Inspection Documents (SIDs) Information.
2. To add the Corrosion Prevention and Control Program (CPCP) Information.
3. To add Control Cable Inspection Information.

FILING INSTRUCTIONS FOR THIS TEMPORARY REVISION

1. For Paper Publications, file this cover sheet behind the publication's title page to identify inclusion of the temporary revision in the manual. Insert the new pages in the publication at the appropriate locations.
2. For CD Publications, mark the temporary revision part number on the CD label with permanent red marker. This will be a visual identifier that the temporary revision must be referenced when the content of the CD is being used. Temporary revisions should be collected and maintained in a notebook or binder near the CD library for quick reference.

EXPORT COMPLIANCE

1. This publication contains technical data and is subject to U.S. export regulations. This information has been exported from the United States in accordance with export administration regulations. Diversion contrary to U.S. law is prohibited. ECCN: 9E991

© Cessna Aircraft Company

INSPECTION TIME LIMITS - STRUCTURE

1. Scope

A. This provides the mandatory times and inspection time intervals for components and airplane structures. This section also gives the required details to monitor them using scheduled inspections. This section applies to items such as fatigue components and structures, which are part of the certification procedures. Refer to the description paragraph below for detailed information concerning each of these sections.

NOTE: The time limits and maintenance checks listed in this section are the minimum requirements for airplanes operated under normal conditions. For airplanes operated in areas where adverse operating conditions may be encountered, such as high salt coastal environments, areas of high heat and humidity, areas where industrial or other airborne pollutants are present, extreme cold, unimproved surfaces, etc., the time limits should be modified accordingly.

NOTE: The inspection guidelines contained in this section are not intended to be all-inclusive, for no such charts can replace the good judgment of certified airframe and power plant mechanics in performance of their duties. As the one primarily responsible for the airworthiness of the airplane, the owner or operator should select only qualified personnel to maintain the airplane.

2. Inspection Requirements

A. Two types of inspection requirements are available based on operating usage and two additional types of inspections are available based on operating environment.
- (1) Operating Usage
  - (a) Severe Usage Environment
    - 1 If the average flight length is less than 30 minutes, then you must use the Severe inspection time limits.
    - 2 If the airplane has been engaged in operations at low altitudes such as pipeline patrol, fish or game spotting, aerial applications, police patrol, sightseeing, livestock management, etc. more than 30% of its life you must use the Severe inspection time limits.
  - (b) Typical Usage Environment
    - 1 If neither 2(A)(1)(a)(1) or 2(A)(1)(a)(2) above applies, the TYPICAL usage environment applies.
- (2) Operating Environment
  - (a) Severe Corrosion Environment
    - 1 If the airplane is operating more than 30% of the time in a zone shown as Severe on the corrosion severity maps in Section 2A-30-01, then the SEVERE CORROSION environment time limits apply.
  - (b) Mild or Moderate Corrosion Environment
    - 1 If 2(A)(2)(a)(1) does not apply, then the MILD/MODERATE CORROSION environment time limits apply.

B. After the operating usage and the operating environment are determined, make a logbook entry that states which inspection schedules (TYPICAL or SEVERE operating usage and MILD/MODERATE or SEVERE operating environment) are being used.

3. Description

NOTE: Listed below is a detailed description and intended purpose of the following sections.

A. Section 2A-10-00, Time Limits/Maintenance Checks - General. This section provides a description and purpose of the inspection time intervals.

© Cessna Aircraft Company

B. Section 2A-10-01, Inspection Time Limits.
   (1) This section lists, in chart format, all inspection requirements which must be performed. Each page contains the following five columns:
      (a) Revision Status provides the date that a given item was added, deleted, or revised. A blank entry in this column indicates no change since the reissue of this manual.
      (b) Inspection Requirements provide a short description of the maintenance item.
      (c) Inspection Interval indicates the frequency of the item.
      (d) Applicable Operation(s) indicates the applicable inspection operation currently containing the inspection item. The frequencies corresponding to each operation are listed in Inspection Interval Requirements in this section.
      (e) Applicable Zone refers to the physical location(s) in the airplane affected by the item.
   (2) Primary purpose of the Inspection Time Limits Section is to provide a complete listing of all inspection items in an order that allows easy access for the information listed previously. This section is not intended to be utilized as a guideline for inspection of the airplane.
   (3) The Inspection Time Limits Table shows the recommended intervals at which items are to be inspected, based on usage and environmental conditions. The operator's inspection intervals shall not deviate from the inspection time limits shown in this table except as provided below:
      (a) Each inspection interval can be exceeded by 10 hours (if time-controlled), or by 30 days (if date-controlled) or can be performed early at any time prior to the regular interval as provided below:
         1 In the event of late compliance of any operation scheduled, the next operation in sequence retains a due point from the time the late operation was originally scheduled.
         2 In the event of early compliance of any operation scheduled, that occurs 10 hours or less ahead of schedule, the next operation due point may remain where originally set.
         3 In the event of early compliance of any operation scheduled, that occurs more than 10 hours ahead of schedule, the next operation due point must be rescheduled to establish a new due point from the time of early accomplishment.

C. Section 2A-20-01, Expanded Maintenance. This section provides additional information on some maintenance/inspection procedures. It describes where the component/item is located, what to inspect for, how to inspect it, etc. Detailed requirements, such as functional checks, operational checks, etc., are listed in the appropriate section of this manual. Refer to the appropriate section for complete detailed information.

D. Section 2A-30-00, Corrosion Prevention and Control Program (CPCP). This section gives the guidelines and applications of the CPCP. This is a program used to control the corrosion in the airplane's primary structure. The objective of the CPCP is to help to prevent or to control the corrosion so that it does not cause a risk to the continued airworthiness of the airplane.

4. Inspection Time Limits

A. A complete airplane inspection includes all inspection items as required by 14 CFR 43, Appendix D, Scope and Detail of annual/100-hour inspections. Refer to Section 2 of the Model 177RG Service Manual.

B. The intervals shown are recommended intervals at which items are to be inspected.
   (1) The 14 CFR Part 91 operator's inspection intervals shall not deviate from the inspection time limits shown in this manual except as provided below: (Refer to 14 CFR 91.409)
      (a) The airplane can only exceed its inspection point up to 10 hours, if the airplane is en route to a facility to have the inspection completed.
      (b) In the event of late compliance of any operation scheduled, the next operation in sequence retains a due point from the time the late operation was originally scheduled.
      (c) In the event of early compliance of any operation scheduled, that occurs 10 hours or less ahead of schedule, the next phase due point may remain where originally set.
      (d) In the event of early compliance of any operation scheduled, that occurs more than 10 hours ahead of schedule, the next operation due point must be rescheduled to establish a new due point from the time of early accomplishment.

© Cessna Aircraft Company

5. Inspection Time Limits Legend

A. Each page of the inspection listed in Inspection Time Limits, Section 2A-10-01, contains the following five columns:

(1) REVISION STATUS - This column provides the date that a given item was added, deleted, or revised. A blank entry in this column indicates no change since the reissue of this manual.

(2) TASK - This column provides a short description of the inspection and/or servicing procedures. Where a more detailed description of the procedure is required, a reference will be made to either another section located within this manual or a specific reference to a supplier publication.

(3) INTERVAL - This column lists the frequency of the inspection.

(4) OPERATION - All of the inspections included in one operation are grouped together in the 2A-12-XX documents (XX equals the operation number).

(5) ZONE - This column locates the components within a specific zone. For a breakdown of how the airplane is zoned, refer to 2A-30-00, Figure 1, Airplane Zones.

6. Inspection Interval Requirements

Operation	Details
1 -	Every 100 hours of operation or 12 months, whichever occurs first.
2 -	Corrosion Prevention and Control Program Inspections (Baseline Program) items that are to be examined every 12 months. Refer to Section 2A-30-00, Corrosion Prevention and Control Program, for additional information concerning repeat Corrosion Program Inspection intervals.
3 -	Corrosion Prevention and Control Program Inspections (Baseline Program) items that are to be examined every 24 months. Refer to Section 2A-30-00, Corrosion Prevention and Control Program for additional information concerning repeat Corrosion Program Inspection intervals.
4 -	Corrosion Prevention and Control Program Inspections (Baseline Program) items that are to be examined every 36 months. Refer to Section 2A-30-00, Corrosion Prevention and Control Program for additional information concerning repeat Corrosion Program Inspection intervals.
5 -	Corrosion Prevention and Control Program Inspections (Baseline Program) items that are to be examined every 48 months. Refer to Section 2A-30-00, Corrosion Prevention and Control Program for additional information concerning repeat Corrosion Program Inspection intervals.
6 -	Corrosion Prevention and Control Program Inspections (Baseline Program) items that are to be examined every 60 months. Refer to Section 2A-30-00, Corrosion Prevention and Control Program for additional information concerning repeat Corrosion Program Inspection intervals.
7-	Supplemental Inspection Document items that are to be examined after the first 1000 hours of operation. The inspection is to be repeated every 1000 hours of operation, after the initial inspection has been accomplished.
8-	Inspection items that are to be examined after the first 100 hours of operation. The inspection is to be repeated every 600 hours of operation or 12 months, whichever occurs first, after the initial inspection has been accomplished.
9-	Supplemental Inspection Document items that are to be examined after the first 10,000 hours of operation or 20 years, whichever occurs first. The inspection is to be repeated every 3000 hours of operation or 5 years, whichever occurs first, after the initial inspection has been accomplished.

© Cessna Aircraft Company

Operation	Details
10 -	Supplemental Inspection Document items that are to be examined after the first 3000 hours of operation or 5 years, whichever occurs first. The inspection is to be repeated every 3000 hours of operation or 5 years, whichever occurs first, after the initial inspection has been accomplished.
11 -	Supplemental Inspection Document items that are to be examined after the first 10 years. The inspection is to be repeated every 5 years after the initial inspection has been accomplished.
12 -	Supplemental Inspection Document items that are to be examined after the first 2000 hours of operation or 20 years, whichever occurs first. The inspection is to be repeated every 200 hours of operation or 1 year, whichever occurs first, after the initial inspection has been accomplished.
13 -	Supplemental Inspection Document items that are to be examined after 12,000 hours or 20 years, whichever occurs first. The inspection is to be repeated every 3000 hours or 5 years, whichever occurs first, after the initial inspection has been accomplished.
14 -	Supplemental Inspection Document items that are to be examined after the first 10,000 hours of operation or 20 years, whichever occurs first. The inspection is to be repeated every 5000 hours of operation or at engine overhaul, whichever occurs first, after the initial inspection has been accomplished.
15 -	Supplemental Inspection Document items that are to be examined after the first 20 years. The inspection is to be repeated every 10 years after the initial inspection has been accomplished, for airplanes operating in a mild or moderate corrosion environment.
16 -	Supplemental Inspection Document items that are to be examined after the first 20 years. The inspection is to be repeated every 5 years after the initial inspection has been accomplished, for airplanes operating in a mild or moderate corrosion environment.
17 -	Supplemental Inspection Document items that are to be examined after the first 10 years. The inspection is to be repeated every 5 years after the initial inspection has been accomplished, for airplanes operating in a mild or moderate corrosion environment.
18 -	Supplemental Inspection Document items that are to be examined after the first 5 years. The inspection is to be repeated every 5 years after the initial inspection has been accomplished, for airplanes operating in a mild or moderate corrosion environment.
19-	Supplemental Inspection Document items that are to be examined after the first 10 years. The inspection is to be repeated every 5 years after the initial inspection has been accomplished, for airplanes operating in a severe corrosion environment.
20 -	Supplemental Inspection Document items that are to be examined after the first 10 years. The inspection is to be repeated every 3 years after the initial inspection has been accomplished, for airplanes operating in a severe corrosion environment.
21 -	Supplemental Inspection Document items that are to be examined after the first 5 years. The inspection is to be repeated every 2 years after the initial inspection has been accomplished, for airplanes operating in a severe corrosion environment.

© Cessna Aircraft Company

Operation	Details
22 -	Supplemental Inspection Document items that are to be examined after the first 3 years. The inspection is to be repeated every 3 years after the initial inspection has been accomplished, for airplanes operating in a severe corrosion environment.
23 -	Supplemental Inspection Document items that are to be examined after the first 10,000 hours of operation or 20 years, whichever occurs first. The inspection is to be repeated every 3000 hours of operation or 5 years, whichever occurs first, after the initial inspection has been accomplished, for airplanes operating in a typical usage environment.
24 -	Supplemental Inspection Document items that are to be examined after 12,000 hours or 20 years, whichever occurs first. The inspection is to be repeated every 1000 hours or 3 years, whichever occurs first, after the initial inspection has been accomplished, for airplanes operating in a typical usage environment.
25 -	Supplemental Inspection Document items that are to be examined after 12,000 hours or 20 years, whichever occurs first. The inspection is to be repeated every 3000 hours or 10 years, whichever occurs first, after the initial inspection has been accomplished, for airplanes operating in a typical usage environment.
26 -	Supplemental Inspection Document items that are to be examined after the first 3000 hours of operation or 5 years, whichever occurs first. The inspection is to be repeated every 1000 hours of operation or 3 years, whichever occurs first, after the initial inspection has been accomplished, for airplanes operating in a severe usage environment.
27 -	Supplemental Inspection Document items that are to be examined after the first 6000 hours of operation or 3 years, whichever occurs first. The inspection is to be repeated every 500 hours of operation or 1 year, whichever occurs first, after the initial inspection has been accomplished, for airplanes operating in a severe usage environment.
28 -	Supplemental Inspection Document items that are to be examined after the first 6000 hours of operation or 10 years, whichever occurs first. The inspection is to be repeated every 1000 hours of operation or 3 years, whichever occurs first, after the initial inspection has been accomplished, for airplanes operating in a severe usage environment.
29 -	Supplemental Inspection Document items that are to be examined after the first 6000 hours of operation or 10 years, whichever occurs first. The inspection is to be repeated every 1000 hours of operation or 3 years, whichever occurs first, after the initial inspection has been accomplished.

© Cessna Aircraft Company

INSPECTION TIME LIMITS

1. Inspection Items

REVISION STATUS	TASK	INTERVAL	OPERATION	ZONE
	Inspect aircraft records to verify that all applicable Cessna Service Information Letters, Cessna Service Bulletins, and Supplier Service Bulletins are complied with.	Every 100 hours or 12 months, whichever occurs first	1	-
	Inspect aircraft records to verify that all applicable Airworthiness Directives and Federal Aviation regulations are complied with.	Every 100 hours or 12 months, whichever occurs first	1	-
	Inspect aircraft records to verify that all logbook entries required by the Federal Aviation Regulations are complied with.	Every 100 hours or 12 months, whichever occurs first	1	-
	Inspect aircraft records to verify that all SID Inspections have been complied with as scheduled.	Every 100 hours or 12 months, whichever occurs first	1	-
	This interval is for mild/moderate corrosion environment. Inspect the carry-thru bulkhead, upper portions of door posts, and wing attachments. Refer to Section 2A-14-07, Supplemental Inspection Document 53-11-01, for inspection procedure.	Initial: 20 years; repeat: 10 years	15	210
	This interval is for severe corrosion environment. Inspect the carry-thru bulkhead, upper portions of door posts, and wing attachments. Refer to Section 2A-14-07, Supplemental Inspection Document 53-11-01, for inspection procedure.	Initial: 10 years; repeat: 3 years	20	210
	This interval is for typical usage environment. Inspect the root rib and wing attachment lugs. Refer to Section 2A-14-08, Supplemental Inspection Document 53-11-02, for inspection procedure.	Initial: 12,000 hours or 20 years, whichever occurs first; repeat: 1000 hours or 3 years, whichever occurs first	24	210, 211
	This interval is for severe usage environment. Inspect the root rib and wing attachment lugs. Refer to Section 2A-14-08, Supplemental Inspection Document 53-11-02, for inspection procedure.	Initial: 6000 hours or 3 years, whichever occurs first; repeat: 500 hours or 1 year, whichever occurs first	27	211
	This interval is for mild/moderate corrosion environment. Cabin interior skin panels. Inspect the cabin interior skin panels, frames, and stringers. Refer to Section 2A-14-09, Supplemental Inspection Document 53-30-01, for inspection procedure.	Initial: 20 years; repeat: 5 years	16	210

© Cessna Aircraft Company

REVISION STATUS	TASK	INTERVAL	OPERATION	ZONE
	This interval is for severe corrosion environment. Cabin interior skin panels. Inspect the cabin interior skin panels, frames, and stringers. Refer to Section 2A-14-09, Supplemental Inspection Document 53-30-01, for inspection procedure.	Initial: 10 years; repeat: 3 years	20	210
	Inspect seat rails for corrosion. Refer to Section 2A-14-10, Supplemental Inspection Document 53-47-01, for inspection procedure.	Initial: 10 years; repeat: 5 years	11	210
	Inspect Main Landing Gear Retraction Mechanism. Refer to Section 2A-14-03, Supplemental Inspection Document 32-10-01, for inspection procedure.	Initial: 6000 hours or 10 years, whichever occurs first; repeat: 1000 hours or 3 years, whichever occurs first	29	210
	Fuselage lower internal structure beneath the floor panels. Make sure you inspect these areas: 1. Cabin structure under floorboards. NOTE: Corrosion Prevention and Control Program Inspection item (baseline interval, refer to Section 2A-30-00 for additional inspection information).	Every 60 months	6	210
	Fuselage internal structure in upper fuselage. Make sure you inspect these areas: 1. Cabin bulkhead corners. 2. Fuselage skin. NOTE: Corrosion Prevention and Control Program Inspection item (baseline interval, refer to Section 2A-30-00 for additional inspection information).	Every 60 months	6	210
	Areas of the cabin structure. Make sure you inspect these areas: 1. Firewall. 2. Firewall attachments. NOTE: Corrosion Prevention and Control Program Inspection item (baseline interval, refer to Section 2A-30-00 for additional inspection information).	Every 60 months	6	210
	Passenger/Crew door retention system. Make sure you inspect these areas: 1. Bell cranks. 2. Pushrods. 3. Handle. 4. Pin retention. 5. Pins. 6. Lockplates and guides. 7. Hinges. 8. Internal door framing. NOTE: Corrosion Prevention and Control Program Inspection item (baseline interval, refer to Section 2A-30-00 for additional inspection information). Note: Remove interior panels for access.	Every 48 months	5	210
	Areas of the cabin structure for the passenger/crew door. Make sure you inspect these areas: 1. Door frames. 2. Door hinges. NOTE: Corrosion Prevention and Control Program Inspection item (baseline interval, refer to Section 2A-30-00 for additional inspection information).	Every 48 months	5	210

© Cessna Aircraft Company

REVISION STATUS	TASK	INTERVAL	OPERATION	ZONE
	Areas of the cabin structure. Make sure you inspect these areas: 1. Cabin door forward and aft frames. 2. Window frames with emphasis at stringers and channel assemblies from aft of door frame to aft bulkhead. 3. Seat attachment structure. 4. Aft Cabin Bulkhead. NOTE: Corrosion Prevention and Control Program Inspection item (baseline interval, refer to Section 2A-30-00 for additional inspection information).	Every 60 months	6	210
	Flaps. 1. Check flap travel cable tension, and travel time. 2. Check flap cable system, control cables, and pulleys, in accordance with the flight cable inspection procedures in Section 2A-20-01, Expanded Maintenance, Control Cables.	Initial: 100 hours; repeat: every 600 hours or 12 months, whichever occurs first	8	210, 510, 610
	Aileron. 1. Check aileron travel and cable tension. 2. Check aileron cable system, control cables, and pulleys, in accordance with the flight cable inspection procedures in Section 2A-20-01, Expanded Maintenance, Control Cables.	Initial: 100 hours; repeat: every 600 hours or 12 months, whichever occurs first	8	210, 510, 520, 610, 620
	Stabilator. 1. Check stabilator travel and cable tension. 2. Check stabilator cable system, control cables, and pulleys, in accordance with the flight cable inspection procedures in Section 2A-20-01, Expanded Maintenance, Control Cables.	Initial: 100 hours; repeat: every 600 hours or 12 months, whichever occurs first	8	210, 310,330, 340
	Stabilator Trim. 1. Check stabilator trim travel and cable tension. 2. Check stabilator trim cable system, control cables, and pulleys, in accordance with the flight cable inspection procedures in Section 2A-20-01, Expanded Maintenance, Control Cables.	Initial: 100 hours; repeat: every 600 hours or 12 months, whichever occurs first	8	210, 310,330, 340
	Rudder. 1. Check rudder travel and cable tension. 2. Check rudder cable system, control cables, and pulleys, in accordance with the flight cable inspection procedures in Section 2A-20-01, Expanded Maintenance, Control Cables.	Initial: 100 hours; repeat: every 600 hours or 12 months, whichever occurs first	8	210, 310, 320
	This interval is for the typical usage environment. Inspect stabilator, including spars, ribs, hinge bolts, hinge bearings, and attach fittings. Refer to Section 2A-14-11, Supplemental Inspection Document 55-10-01, for inspection procedures.	Initial: 10,000 hours or 20 years, whichever occurs first; repeat: 3000 hours or 5 years, whichever occurs first	23	330, 340
	This interval is for the severe usage environment. Inspect stabilator, including spars, ribs, hinge bolts, hinge bearings, and attach fittings. Refer to Section 2A-14-11, Supplemental Inspection Document 55-10-01, for inspection procedures.	Initial: 3000 hours or 5 years, whichever occurs first; repeat: 1000 hours or 3 years, whichever occurs first	26	330, 340

© Cessna Aircraft Company

REVISION STATUS	TASK	INTERVAL	OPERATION	ZONE
	Inspect vertical stabilizer and rudder structure and attachments. Refer to Section 2A-14-13, Supplemental Inspection Document 55-30-01, for inspection procedure.	Initial: 10,000 hours or 20 years, whichever occurs first; repeat: 3000 hours or 5 years, whichever occurs first	9	310, 320
	This interval is for typical usage environment. 1. Inspect inboard wing structure for damage and working rivets. 2. Inspect flap actuator support structure. Refer to Section 2A-14-14, Supplemental Inspection Document 57-11-01, for inspection procedure.	Initial: 12,000 hours or 20 years, whichever occurs first; repeat: 3000 hours or 10 years, whichever occurs first	25	510, 610
	This interval is for severe usage environment. 1. Inspect inboard wing structure for damage and working rivets. 2. Inspect flap actuator support structure. Refer to Section 2A-14-14, Supplemental Inspection Document 57-11-01, for inspection procedure.	Initial: 6000 hours or 10 years, whichever occurs first; repeat: 1000 hours or 3 years, whichever occurs first	28	510, 610
	This interval is for mild/moderate corrosion environment. Inspect wing root rib. Refer to Section 2A-14-16, Supplemental Inspection Document 57-12-01, for inspection procedure.	Initial: 5 years; repeat: 5 years	18	510, 610
	This interval is for severe corrosion environment. Inspect wing root rib. Refer to Section 2A-14-16, Supplemental Inspection Document 57-12-01, for inspection procedure.	Initial: 3 years; repeat: 3 years	22	510, 610
	This interval is for typical usage environment. Inspect front spar attachments. Refer to Section 2A-14-17, Supplemental Inspection Document 57-30-01, for inspection procedure.	Initial: 12,000 hours or 20 years, whichever occurs first; repeat: 3000 hours or 10 years, whichever occurs first	25	510, 610
	This interval is for severe usage environment. Inspect front spar attachments. Refer to Section 2A-14-17, Supplemental Inspection Document 57-30-01, for inspection procedure.	Initial: 6000 Hours or 10 Years, whichever occurs first; repeat: 1000 Hours or 3 Years, whichever occurs first	28	510, 610
	This interval is for mild/moderate corrosion environment. Inspect wing for corrosion and missing or loose fasteners. Refer to Section 2A-14-15, Supplemental Inspection Document 57-11-02, for inspection procedure.	Initial: 20 years; repeat: 10 years	15	510, 520, 610, 620

© Cessna Aircraft Company

REVISION STATUS	TASK	INTERVAL	OPERATION	ZONE
	This interval is for severe corrosion environment. Inspect wing for corrosion and missing or loose fasteners. Refer to Section 2A-14-15, Supplemental Inspection Document 57-11-02, for inspection procedure.	Initial: 10 years; repeat: 5 years	19	510, 520, 610, 620
	This interval is for mild/moderate corrosion environment. Inspect flap tracks for corrosion. Refer to Section 2A-14-19, Supplemental Inspection Document 57-53-01, for inspection procedure.	Initial: 10 years; repeat: 5 years	17	510, 610
	This interval is for severe corrosion environment. Inspect flap tracks for corrosion. Refer to Section 2A-14-19, Supplemental Inspection Document 57-53-01, for inspection procedure.	Initial: 5 years; repeat: 2 years	21	510, 610
	Wing structure internal. Make sure you inspect these areas: 1. Main spar upper and lower carry-thru fittings, 2. Main spar upper and lower caps, 3. Main spar web. NOTE: Corrosion Prevention and Control Program Inspection item (baseline interval, refer to Section 2A-30-00 for additional inspection information).	Every 12 months	2	510, 520, 610, 620
	Wing structure internal. Make sure you inspect these areas: 1. Wing front spar and lower spar caps. 2. Upper and lower wing attach spar fittings. 3. Wing lower skins. NOTE: Corrosion Prevention and Control Program Inspection item (baseline interval, refer to Section 2A-30-00 for additional inspection information).	Every 60 months	6	510, 520, 610, 620
	Wing structure external. Make sure you inspect these areas: 1. Skin with emphasis at skin overlaps and under access panels. 2. Rear spar upper and lower caps. 3. Rear spar web. NOTE: Corrosion Prevention and Control Program Inspection item (baseline interval, refer to Section 2A-30-00 for additional inspection information).	Every 60 months	6	510, 520, 610, 620
	Aileron attachments. Make sure you inspect these areas: 1. Aileron hinges, 2. Hinge bolts, 3. Hinge bearings, 4. Hinge and pushrod support structure. NOTE: Corrosion Prevention and Control Inspection Item (baseline interval, refer to Section 2A-30-00 for additional inspection information). NOTE: Do not apply LPS-3 Heavy Duty Rust Inhibitor on hinge bearing.	Every 24 months	3	520, 620
	Inspect aileron hinges, hinge bolts, hinge bearings, and hinge and pushrod attach fittings. Refer to Section 2A-14-18, Supplemental Inspection Document 57-51-01, for inspection procedure.	Initial: 12,000 hours or 20 years, whichever occurs first; repeat: 3000 hours or 5 years, whichever occurs first	13	520, 620

© Cessna Aircraft Company

REVISION STATUS	TASK	INTERVAL	OPERATION	ZONE
	Vertical stabilizer structure. Make sure you inspect these areas: 1. Forward spar attachment to tailcone bulkhead. 2. Aft spar attachment to lower stabilizer spar. 3. Front and rear spars. 4. Rear spar rudder hinges. NOTE: Corrosion Prevention and Control Program Inspection item (baseline interval, refer to Section 2A-30-00 for additional inspection information)	Every 60 months	6	310, 320
	Inspect nose landing gear torque link, bolts, bushings, and nose landing gear fork. Refer to Section 2A-14-06, Supplemental Inspection Document 32-20-01, for inspection procedure.	Initial: 3000 hours or 5 years, whichever occurs first; Repeat: 3000 hours or 5 years, whichever occurs first	10	720
	This inspection is for mild/moderate corrosion environment. Inspect main landing gear spring for rust or damage to finish. Refer to Section 2A-14-04, Supplemental Inspection Document 32-13-01, for inspection procedure.	Initial: 20 years; Repeat: 10 years	15	730, 740
	This interval is for severe corrosion environment. Inspect main landing gear spring for rust or damage to finish. Refer to Section 2A-14-04, Supplemental Inspection Document 32-13-01, for inspection procedure.	Initial: 10 years; Repeat: 5 years	19	730, 740
	Inspect Main Landing Gear Axle. Refer to Section 2A-14-05 Supplemental Inspection Document 32-13-02, for inspection procedure.	Initial: 6000 hours or 10 years, whichever occurs first; Repeat: 1000 hours or 3 years, whichever occurs first	29	730, 740
	Main landing gear axle assembly. Make sure you inspect these areas: 1. Main gear axle and attach bolts. 2. Wheel halves. NOTE: Corrosion Prevention and Control Program Inspection item (baseline interval, refer to Section 2A-30-00 for additional inspection information). NOTE: Do not apply LPS-3 Heavy-Duty Rust Inhibitor to the bearing. NOTE: Coordinate with tire change.	Every 36 months	4	730, 740
	Nose gear trunnion, steering assembly, torque link assembly, nose gear fork and axle. Make sure you inspect these areas: 1. Nose gear trunnion surface. 2. Steering collar and steering collar attach bolt. 3. Torque link, torque link attach pin, and attach bolt. 4. Nose gear fork. 5. Nose gear axle. NOTE: Corrosion Prevention and Control Inspection Item (baseline interval, refer to Section 2A-30-00 for additional inspection information).	Every 36 months	4	720

© Cessna Aircraft Company

REVISION STATUS	TASK	INTERVAL	OPERATION	ZONE
	Nose gear trunnion, torque link assembly, and nose gear fork. Make sure you inspect these areas: 1. Nose gear trunnion upper and lower inner bore surface and bearing. 2. Torque link bolt and attach pin inner bore surface. 3. Nose gear fork lug inner bore surface. NOTE: Corrosion Prevention and Control Inspection Item (baseline interval, refer to Section 2A-30-00 for additional inspection information).	Every 36 months	4	720
	Nose landing gear outer barrel assembly. Make sure you inspect these areas: 1. Outer barrel assembly. 2. Upper strut end and lower collar assembly. NOTE: Corrosion Prevention and Control Inspection Item (baseline interval, refer to Section 2A-30-00 for additional inspection information). NOTE: do not apply LPS-3 Heavy-Duty Rust Inhibitor to the sliding surfaces of the oleo strut.	Every 36 months	4	720
	Nose gear axle assembly. Make sure you inspect these areas: 1. Nose gear axle and attach bolt. 2. Wheel halves. NOTE: Corrosion Prevention and Control Program Inspection item (baseline interval, refer to Section 2A-30-00 for additional inspection information). NOTE: Disassemble the nose gear strut to get access. NOTE: Do not apply LPS-3 Heavy-Duty Rust Inhibitor to the sliding surfaces of the oleo strut. NOTE: Coordinate with tire change.	Every 60 months	6	720
	Stabilator trim system. 1. Inspect stabilator trim brackets and actuator support brackets. 2. Inspect pulleys, attaching structure, and fasteners. Refer to Section 2A-14-02, Supplemental Inspection Document 27-30-02, for inspection procedures. Coordinate with actuator overhaul.	1000 hours; repeat: 1000 hours	7	330, 340
	Inspect stabilator balance weight arm brackets. Refer to Section 2A-14-12, Supplemental Inspection Document 55-20-02, for inspection procedures.	2000 hours or 20 years, whichever occurs first; repeat: 200 hours or 1 year, whichever occurs first	12	330, 340
	Stabilator structure. Make sure you inspect these areas: 1. Stabilator attachment to the tailcone bulkhead, 2. Front and rear spars. NOTE: Corrosion Prevention and Control Program Inspection item (baseline interval, refer to Section 2A-30-00 for additional inspection information).	Every 60 months	6	330, 340

© Cessna Aircraft Company

REVI-SION STATUS	TASK	INTERVAL	OPERATION	ZONE
	Stabilator trim system. Make sure you inspect these areas: 1. Stabilator trim brackets, 2. Actuator support brackets and bearings. 3. Pulleys and attaching structure. NOTE: Corrosion Prevention and Control Inspection Item (baseline interval, refer to Section 2A-30-00 for additional inspection information). NOTE: Do not apply LPS-3 Heavy Duty Rust Inhibitor on hinge bearing.	Every 24 months	3	330, 340
	Inspect rudder pedal torque tube and cable attachment arms. Refer to 2A-14-01, Supplemental Inspection Document 27-20-01, for inspection procedure.	Initial: 10,000 hours or 20 years, whichever occurs first; repeat: 3000 hours or 5 years, whichever occurs first	9	210
	Rudder attachments. Make sure you inspect these areas: 1. Hinge brackets. 2. Hinge bolts. 3. Hinge bearings. NOTE: Corrosion Prevention and Control Inspection Item (baseline interval, refer to Section 2A-30-00 for additional inspection information). NOTE: Do not apply LPS-3 Heavy Duty Rust Inhibitor on hinge bearing.	Every 24 months	3	320
	Rudder structure. Make sure you inspect these areas: 1. Skin. 2. Forward and aft spars at hinge locations. NOTE: Corrosion Prevention and Control Inspection Item (baseline interval, refer to Section 2A-30-00 for additional inspection information).	Every 24 months	3	320
	Inspect tubular engine mount. Refer to Section 2A-14-20, Supplemental Inspection Document 71-20-01, for inspection procedure.	Initial: 10,000 hours or 20 years, whichever occurs first; Repeat every 5000 hours or at engine overhaul, whichever occurs first	14	120
	Engine support structure. Make sure you inspect these areas: 1. Engine truss. Pay particular attention to vicinity of welds. NOTE: Corrosion Prevention and Control Program Inspection item (refer to Section 2A-30-00 for additional inspection information).	Every 12 months	2	120

© Cessna Aircraft Company

INSPECTION OPERATION 1

Date: _____

Registration Number: _____

Serial Number: _____

Total Time: _____

1. Description

A. Operation 1 gives Records Inspection items that are to be inspected every 100 hours or 12 months, whichever occurs first.

B. Inspection items are given in the order of the zone in which the inspection is to be completed. Frequently, tasks give more information about each required inspection.

C. The right portion of each page gives space for the mechanic's and inspector's initials and remarks. A copy of these pages can be used as a checklist when these inspections are completed.

2. General Inspection Criteria

A. While each of the specified inspection tasks in this section are done, more general inspections of the adjacent areas must be done while access is available. These general inspections are used to find apparent conditions which can need more maintenance.

B. If a component or system is changed after a required task has been completed, then that specified task must be done again to make sure it is correct before the system or component is returned to service.

C. Do a preflight inspection after these inspections are completed to make sure all the required items are correctly serviced. Refer to the Approved Airplane Flight Manual.

REVISION STATUS	TASK	ZONE	MECH INSP	REMARKS
	Inspect aircraft records to verify that all applicable Cessna Service Information Letters, Cessna Service Bulletins, and Supplier Service Bulletins are complied with.	ALL		
	Inspect aircraft records to verify that all applicable Airworthiness Directives and Federal Aviation regulations are complied with.	ALL		
	Inspect aircraft records to verify that all logbook entries required by the Federal Aviation Regulations are complied with.	ALL		
	Inspect aircraft records to verify that all SID Inspections have been complied with as scheduled.	ALL		
	*** End of Operation 1 Inspection Items ***			

© Cessna Aircraft Company

INSPECTION OPERATION 2

Date: _____

Registration Number: _____

Serial Number: _____

Total Time: _____

1. Description

A. Operation 2 gives Corrosion Prevention and Control Program Inspections (Baseline Program) items that are to be inspected every 12 months. Refer to Section 2A-30-00, Corrosion Prevention and Control Program, for additional information concerning repeat Corrosion Program Inspection intervals.

B. Inspection items are given in the order of the zone in which the inspection is to be completed. Frequently, tasks give more information about each required inspection.

C. The right portion of each page gives space for the mechanic's and inspector's initials and remarks. A copy of these pages can be used as a checklist when these inspections are completed.

2. General Inspection Criteria

A. While each of the specified inspection tasks in this section are done, more general inspections of the adjacent areas must be done while access is available. These general inspections are used to find apparent conditions which can need more maintenance.

B. If a component or system is changed after a required task has been completed, then that specified task must be done again to make sure it is correct before the system or component is returned to service.

C. Do a preflight inspection after these inspections are completed to make sure all the required items are correctly serviced. Refer to the Approved Airplane Flight Manual.

TASK	ZONE	MECH	INSP	REMARKS
Engine support structure. Make sure you inspect these areas: 1. Engine truss. Pay particular attention to vicinity of welds. NOTE: Corrosion Prevention and Control Program Inspection item (refer to Section 2A-30-00 for additional inspection information).	120			
Wing Structure Internal. Make sure you examine these areas: 1. Main spar upper and lower carry-thru fittings, 2. Main spar upper and lower caps, 3. Main spar web. NOTE: Corrosion Prevention and Control Program Inspection item (baseline interval, refer to Section 2A-30-00 for additional inspection information).	510, 520, 610, 620			

*** End of Operation 2 Inspection Items ***

© Cessna Aircraft Company

INSPECTION OPERATION 3

Date: _____

Registration Number: _____

Serial Number: _____

Total Time: _____

1. Description

A. Operation 3 gives Corrosion Prevention and Control Program Inspections (Baseline Program) items that are to be inspected every 24 months. Refer to Section 2A-30-00, Corrosion Prevention and Control Program, for additional information concerning repeat Corrosion Program Inspection intervals.

B. Inspection items are given in the order of the zone in which the inspection is to be completed. Frequently, tasks give more information about each required inspection.

C. The right portion of each page gives space for the mechanic's and inspector's initials and remarks. A copy of these pages can be used as a checklist when these inspections are completed.

2. General Inspection Criteria

A. While each of the specified inspection tasks in this section are done, more general inspections of the adjacent areas must be done while access is available. These general inspections are used to find apparent conditions which can need more maintenance.

B. If a component or system is changed after a required task has been completed, then that specified task must be done again to make sure it is correct before the system or component is returned to service.

C. Do a preflight inspection after these inspections are completed to make sure all the required items are correctly serviced. Refer to the Approved Airplane Flight Manual.

© Cessna Aircraft Company

TASK	ZONE	MECH	INSP	REMARKS
Aileron attachments. Make sure you inspect these areas: 1. Aileron hinges, 2. Hinge bolts, 3. Hinge bearings, 4. Hinge and pushrod support structure. NOTE: Corrosion Prevention and Control Inspection Item (baseline interval, refer to Section 2A-30-00 for additional inspection information). NOTE: Do not apply LPS-3 Heavy Duty Rust Inhibitor on hinge bearing.	520, 620			
Stabilator trim system. Make sure you inspect these areas: 1. Stabilator trim brackets, 2. Actuator support brackets and bearings. 3. Pulleys and attaching structure. NOTE: Corrosion Prevention and Control Inspection Item (baseline interval, refer to Section 2A-30-00 for additional inspection information). NOTE: Do not apply LPS-3 Heavy Duty Rust Inhibitor on hinge bearing.	330, 340			
Rudder attachments. Make sure you inspect these areas: 1. Hinge brackets. 2. Hinge bolts. 3. Hinge bearings. NOTE: Corrosion Prevention and Control Inspection Item (baseline interval, refer to Section 2A-30-00 for additional inspection information). NOTE: Do not apply LPS-3 Heavy Duty Rust Inhibitor on hinge bearing.	320			
Rudder structure. Make sure you inspect these areas: 1. Skin. 2. Forward and aft spars at hinge locations. NOTE: Corrosion Prevention and Control Inspection Item (baseline interval, refer to Section 2A-30-00 for additional inspection information).	320			

*** End of Operation 3 Inspection Items ***

© Cessna Aircraft Company

INSPECTION OPERATION 4

Date: _____

Registration Number: _____

Serial Number: _____

Total Time: _____

1. Description

A. Operation 4 gives Corrosion Prevention and Control Program Inspections (Baseline Program) items that are to be inspected every 36 months. Refer to Section 2A-30-00, Corrosion Prevention and Control Program, for additional information concerning repeat Corrosion Program Inspection intervals.

B. Inspection items are given in the order of the zone in which the inspection is to be completed. Frequently, tasks give more information about each required inspection.

C. The right portion of each page gives space for the mechanic's and inspector's initials and remarks. A copy of these pages can be used as a checklist when these inspections are completed.

2. General Inspection Criteria

A. While each of the specified inspection tasks in this section are done, more general inspections of the adjacent areas must be done while access is available. These general inspections are used to find apparent conditions which can need more maintenance.

B. If a component or system is changed after a required task has been completed, then that specified task must be done again to make sure it is correct before the system or component is returned to service.

C. Do a preflight inspection after these inspections are completed to make sure all the required items are correctly serviced. Refer to the Approved Airplane Flight Manual.

© Cessna Aircraft Company

TASK	ZONE	MECH	INSP	REMARKS
Main landing gear axle assembly. Make sure you inspect these areas: 1. Main gear axle and attach bolts. 2. Wheel halves. NOTE: Corrosion Prevention and Control Program Inspection item (baseline interval, refer to Section 2A-30-00 for additional inspection information). NOTE: Do not apply LPS-3 Heavy-Duty Rust Inhibitor to the bearing. NOTE: Coordinate with tire change.	730, 740			
Nose gear trunnion, steering assembly, torque link assembly, nose gear fork and axle. Make sure you inspect these areas: 1. Nose gear trunnion surface. 2. Steering collar and steering collar attach bolt. 3. Torque link, torque link attach pin, and attach bolt. 4. Nose gear fork. 5. Nose gear axle. NOTE: Corrosion Prevention and Control Inspection Item (baseline interval, refer to Section 2A-30-00 for additional inspection information).	720			
Nose gear trunnion, torque link assembly, and nose gear fork. Make sure you inspect these areas: 1. Nose gear trunnion upper and lower inner bore surface and bearing. 2. Torque link bolt and attach pin inner bore surface. 3. Nose gear fork lug inner bore surface. NOTE: Corrosion Prevention and Control Inspection Item (baseline interval, refer to Section 2A-30-00 for additional inspection information).	720			
Nose landing gear outer barrel assembly. Make sure you inspect these areas: 1. Outer barrel assembly. 2. Upper strut end and lower collar assembly. NOTE: Corrosion Prevention and Control Inspection Item (baseline interval, refer to Section 2A-30-00 for additional inspection information). NOTE: do not apply LPS-3 Heavy-Duty Rust Inhibitor to the sliding surfaces of the oleo strut.	720			

*** End of Operation 4 Inspection Items ***

© Cessna Aircraft Company

INSPECTION OPERATION 5

Date: _____

Registration Number: _____

Serial Number: _____

Total Time: _____

1. Description

A. Operation 5 gives Corrosion Prevention and Control Program Inspections (Baseline Program) items that are to be inspected every 48 months. Refer to Section 2A-30-00, Corrosion Prevention and Control Program, for additional information concerning repeat Corrosion Program Inspection intervals.

B. Inspection items are given in the order of the zone in which the inspection is to be completed. Frequently, tasks give more information about each required inspection.

C. The right portion of each page gives space for the mechanic's and inspector's initials and remarks. A copy of these pages can be used as a checklist when these inspections are completed.

2. General Inspection Criteria

A. While each of the specified inspection tasks in this section are done, more general inspections of the adjacent areas must be done while access is available. These general inspections are used to find apparent conditions which can need more maintenance.

B. If a component or system is changed after a required task has been completed, then that specified task must be done again to make sure it is correct before the system or component is returned to service.

C. Do a preflight inspection after these inspections are completed to make sure all the required items are correctly serviced. Refer to the Approved Airplane Flight Manual.

TASK	ZONE	MECH	INSP	REMARKS
Passenger/Crew door retention system. Make sure you inspect these areas: 1. Bell cranks. 2. Pushrods. 3. Handle. 4. Pin retention. 5. Pins. 6. Lockplates and guides. 7. Hinges. 8. Internal door framing. NOTE: Corrosion Prevention and Control Program Inspection item (baseline interval, refer to Section 2A-30-00 for additional inspection information). Note: Remove interior panels for access.	210			
Areas of the cabin structure for the passenger/crew door. Make sure you inspect these areas: 1. Door frames. 2. Door hinges. NOTE: Corrosion Prevention and Control Program Inspection item (baseline interval, refer to Section 2A-30-00 for additional inspection information).	210			

*** End of Operation 5 Inspection Items ***

© Cessna Aircraft Company

INSPECTION OPERATION 6

Date: _____

Registration Number: _____

Serial Number: _____

Total Time: _____

1. Description

A. Operation 6 gives Corrosion Prevention and Control Program Inspections (Baseline Program) items that are to be inspected every 60 months. Refer to Section 2A-30-00, Corrosion Prevention and Control Program, for additional information concerning repeat Corrosion Program Inspection intervals.

B. Inspection items are given in the order of the zone in which the inspection is to be completed. Frequently, tasks give more information about each required inspection.

C. The right portion of each page gives space for the mechanic's and inspector's initials and remarks. A copy of these pages can be used as a checklist when these inspections are completed.

2. General Inspection Criteria

A. While each of the specified inspection tasks in this section are done, more general inspections of the adjacent areas must be done while access is available. These general inspections are used to find apparent conditions which can need more maintenance.

B. If a component or system is changed after a required task has been completed, then that specified task must be done again to make sure it is correct before the system or component is returned to service.

C. Do a preflight inspection after these inspections are completed to make sure all the required items are correctly serviced. Refer to the Approved Airplane Flight Manual.

TASK	ZONE	MECH	INSP	REMARKS
Fuselage lower internal structure beneath the floor panels. Make sure you inspect these areas: 1. Cabin structure under floorboards. NOTE: Corrosion Prevention and Control Program Inspection item (baseline interval, refer to Section 2A-30-00 for additional inspection information).	210			
Fuselage internal structure in upper fuselage. Make sure you inspect these areas: 1. Cabin bulkhead corners. 2. Fuselage skin. NOTE: Corrosion Prevention and Control Program Inspection item (baseline interval, refer to Section 2A-30-00 for additional inspection information).	210			
Areas of the cabin structure. Make sure you inspect these areas: 1. Firewall. 2. Firewall attachments. NOTE: Corrosion Prevention and Control Program Inspection item (baseline interval, refer to Section 2A-30-00 for additional inspection information).	210			

© Cessna Aircraft Company

TASK	ZONE	MECH	INSP	REMARKS
Areas of the cabin structure. Make sure you inspect these areas: 1. Cabin door forward and aft frames. 2. Window frames with emphasis at stringers and channel assemblies from aft of door frame to aft bulkhead. 3. Seat attachment structure. 4. Aft Cabin Bulkhead. NOTE: Corrosion Prevention and Control Program Inspection item (baseline interval, refer to Section 2A-30-00 for additional inspection information).	210			
Wing structure internal. Make sure you inspect these areas: 1. Wing front spar and lower spar caps. 2. Upper and lower wing attach spar fittings. 3. Wing lower skins. NOTE: Corrosion Prevention and Control Program Inspection item (baseline interval, refer to Section 2A-30-00 for additional inspection information).	510, 520, 610, 620			
Wing structure external. Make sure you inspect these areas: 1. Skin with emphasis at skin overlaps and under access panels. 2. Rear spar upper and lower caps. 3. Rear spar web. NOTE: Corrosion Prevention and Control Program Inspection item (baseline interval, refer to Section 2A-30-00 for additional inspection information).	510, 520, 610, 620			
Vertical stabilizer structure. Make sure you inspect these areas: 1. Forward spar attachment to tailcone bulkhead. 2. Aft spar attachment to lower stabilizer spar. 3. Front and rear spars. 4. Rear spar rudder hinges. NOTE: Corrosion Prevention and Control Program Inspection item (baseline interval, refer to Section 2A-30-00 for additional inspection information)	310, 320			
Nose gear axle assembly. Make sure you inspect these areas: 1. Nose gear axle and attach bolt. 2. Wheel halves. NOTE: Corrosion Prevention and Control Program Inspection item (baseline interval, refer to Section 2A-30-00 for additional inspection information). NOTE: Disassemble the nose gear strut to get access. NOTE: Do not apply LPS-3 Heavy-Duty Rust Inhibitor to the sliding surfaces of the oleo strut. NOTE: Coordinate with tire change.	720			
Stabilator structure. Make sure you inspect these areas: 1. Stabilator attachment to the tailcone bulkhead, 2. Front and rear spars. NOTE: Corrosion Prevention and Control Program Inspection item (baseline interval, refer to Section 2A-30-00 for additional inspection information).	330, 340			
*** End of Operation 6 Inspection Items ***				

© Cessna Aircraft Company

INSPECTION OPERATION 7

Date: _____

Registration Number: _____

Serial Number: _____

Total Time: _____

1. Description

A. Operation 7 gives Supplemental Inspection Document items that are to be inspected every 1000 hours.

B. Inspection items are given in the order of the zone in which the inspection is to be completed. Frequently, tasks give more information about each required inspection.

C. The right portion of each page gives space for the mechanic's and inspector's initials and remarks. A copy of these pages can be used as a checklist when these inspections are completed.

2. General Inspection Criteria

A. While each of the specified inspection tasks in this section are done, more general inspections of the adjacent areas must be done while access is available. These general inspections are used to find apparent conditions which can need more maintenance.

B. If a component or system is changed after a required task has been completed, then that specified task must be done again to make sure it is correct before the system or component is returned to service.

C. Do a preflight inspection after these inspections are completed to make sure all the required items are correctly serviced. Refer to the Approved Airplane Flight Manual.

TASK	ZONE	MECH	INSP	REMARKS
Stabilator trim system. 1. Inspect stabilator trim brackets and actuator support brackets. 2. Inspect pulleys, attaching structure, and fasteners. Refer to Section 2A-14-02, Supplemental Inspection Document 27-30-02, for inspection procedures. Coordinate with actuator overhaul.	330, 340			

*** End of Operation 7 Inspection Items ***

© Cessna Aircraft Company

INSPECTION OPERATION 8

Date: _____

Registration Number: _____

Serial Number: _____

Total Time: _____

1. Description

A. Operation 8 gives Inspection items that are to be examined after the first 100 hours of operation, then every 600 hours or 12 months, whichever occurs first, thereafter.

B. Inspection items are given in the order of the zone in which the inspection is to be completed. Frequently, tasks give more information about each required inspection.

C. The right portion of each page gives space for the mechanic's and inspector's initials and remarks. A copy of these pages can be used as a checklist when these inspections are completed.

2. General Inspection Criteria

A. While each of the specified inspection tasks in this section are done, more general inspections of the adjacent areas must be done while access is available. These general inspections are used to find apparent conditions which can need more maintenance.

B. If a component or system is changed after a required task has been completed, then that specified task must be done again to make sure it is correct before the system or component is returned to service.

C. Do a preflight inspection after these inspections are completed to make sure all the required items are correctly serviced. Refer to the Approved Airplane Flight Manual.

TASK	ZONE	MECH	INSP	REMARKS
Stabilator. 1. Check stabilator travel and cable tension. 2. Check stabilator cable system, control cables, and pulleys, in accordance with the flight cable inspection procedures in Section 2A-20-01, Expanded Maintenance, Control Cables.	210, 310,330, 340			
Stabilator Trim. 1. Check stabilator trim travel and cable tension. 2. Check stabilator trim cable system, control cables, and pulleys, in accordance with the flight cable inspection procedures in Section 2A-20-01, Expanded Maintenance, Control Cables.	210, 310,330, 340			
Rudder. 1. Check rudder travel and cable tension. 2. Check rudder cable system, control cables, and pulleys, in accordance with the flight cable inspection procedures in Section 2A-20-01, Expanded Maintenance, Control Cables.	210, 310,320			

© Cessna Aircraft Company

TASK	ZONE	MECH	INSP	REMARKS
Flaps. 1. Check flap travel cable tension, and travel time. 2. Check flap cable system, control cables, and pulleys, in accordance with the flight cable inspection procedures in Section 2A-20-01, Expanded Maintenance, Control Cables.	210, 510, 610			
Aileron. 1. Check aileron travel and cable tension. 2. Check aileron cable system, control cables, and pulleys, in accordance with the flight cable inspection procedures in Section 2A-20-01, Expanded Maintenance, Control Cables.	210, 510,520, 610, 620			

*** End of Operation 8 Inspection Items ***

© Cessna Aircraft Company

INSPECTION OPERATION 9

Date: _____

Registration Number: _____

Serial Number: _____

Total Time: _____

1. Description

A. Operation 9 gives Supplemental Inspection Document items that are to be inspected after the first 10,000 hours of operation or 20 years, whichever occurs first. The inspection is to be repeated every 3000 hours of operation or 5 years, whichever occurs first, after the initial inspection has been accomplished.

B. Inspection items are given in the order of the zone in which the inspection is to be completed. Frequently, tasks give more information about each required inspection.

C. The right portion of each page gives space for the mechanic's and inspector's initials and remarks. A copy of these pages can be used as a checklist when these inspections are completed.

2. General Inspection Criteria

A. While each of the specified inspection tasks in this section are done, more general inspections of the adjacent areas must be done while access is available. These general inspections are used to find apparent conditions which can need more maintenance.

B. If a component or system is changed after a required task has been completed, then that specified task must be done again to make sure it is correct before the system or component is returned to service.

C. Do a preflight inspection after these inspections are completed to make sure all the required items are correctly serviced. Refer to the Approved Airplane Flight Manual.

TASK	ZONE	MECH	INSP	REMARKS
Inspect vertical stabilizer and rudder structure and attachments. Refer to Section 2A-14-13, Supplemental Inspection Document 55-30-01, for inspection procedure.	310, 320			
Inspect rudder pedal torque tube and cable attachment arms. Refer to 2A-14-01, Supplemental Inspection Document 27-20-01, for inspection procedure.	210			

*** End of Operation 9 Inspection Items ***

© Cessna Aircraft Company

INSPECTION OPERATION 10

Date: _____

Registration Number: _____

Serial Number: _____

Total Time: _____

1. Description

A. Operation 10 gives Supplemental Inspection Document items that are to be inspected after the first 3000 hours of operation or 5 years, whichever occurs first. The inspection is to be repeated every 3000 hours of operation or 5 years, whichever occurs first, after the initial inspection has been accomplished.

B. Inspection items are given in the order of the zone in which the inspection is to be completed. Frequently, tasks give more information about each required inspection.

C. The right portion of each page gives space for the mechanic's and inspector's initials and remarks. A copy of these pages can be used as a checklist when these inspections are completed.

2. General Inspection Criteria

A. While each of the specified inspection tasks in this section are done, more general inspections of the adjacent areas must be done while access is available. These general inspections are used to find apparent conditions which can need more maintenance.

B. If a component or system is changed after a required task has been completed, then that specified task must be done again to make sure it is correct before the system or component is returned to service.

C. Do a preflight inspection after these inspections are completed to make sure all the required items are correctly serviced. Refer to the Approved Airplane Flight Manual.

TASK	ZONE	MECH	INSP	REMARKS
Inspect nose landing gear torque link, bolts, bushings, and nose landing gear fork. Refer to Section 2A-14-06, Supplemental Inspection Document 32-20-01, for inspection procedure.	720			

*** End of Operation 10 Inspection Items ***

© Cessna Aircraft Company

INSPECTION OPERATION 11

Date: _____

Registration Number: _____

Serial Number: _____

Total Time: _____

1. Description

A. Operation 11 gives Supplemental Inspection Document items that are to be inspected after the first 10 years. The inspection is to be repeated every 5 years after the initial inspection has been accomplished.

B. Inspection items are given in the order of the zone in which the inspection is to be completed. Frequently, tasks give more information about each required inspection.

C. The right portion of each page gives space for the mechanic's and inspector's initials and remarks. A copy of these pages can be used as a checklist when these inspections are completed.

2. General Inspection Criteria

A. While each of the specified inspection tasks in this section are done, more general inspections of the adjacent areas must be done while access is available. These general inspections are used to find apparent conditions which can need more maintenance.

B. If a component or system is changed after a required task has been completed, then that specified task must be done again to make sure it is correct before the system or component is returned to service.

C. Do a preflight inspection after these inspections are completed to make sure all the required items are correctly serviced. Refer to the Approved Airplane Flight Manual.

TASK	ZONE	MECH	INSP	REMARKS
Inspect seat rails for corrosion. Refer to Section 2A-14-10, Supplemental Inspection Document 53-47-01, for inspection procedure.	210			

*** End of Operation 11 Inspection Items ***

© Cessna Aircraft Company

INSPECTION OPERATION 12

Date: _____

Registration Number: _____

Serial Number: _____

Total Time: _____

1. Description

A. Operation 12 gives Supplemental Inspection Document items that are to be examined after the first 2000 hours of operation or 20 years, whichever occurs first. The inspection is to be repeated every 200 hours of operation or 1 year, whichever occurs first, after the initial inspection has been accomplished.

B. Inspection items are given in the order of the zone in which the inspection is to be completed. Frequently, tasks give more information about each required inspection.

C. The right portion of each page gives space for the mechanic's and inspector's initials and remarks. A copy of these pages can be used as a checklist when these inspections are completed.

2. General Inspection Criteria

A. While each of the specified inspection tasks in this section are done, more general inspections of the adjacent areas must be done while access is available. These general inspections are used to find apparent conditions which can need more maintenance.

B. If a component or system is changed after a required task has been completed, then that specified task must be done again to make sure it is correct before the system or component is returned to service.

C. Do a preflight inspection after these inspections are completed to make sure all the required items are correctly serviced. Refer to the Approved Airplane Flight Manual.

TASK	ZONE	MECH	INSP	REMARKS
Inspect stabilator balance weight arm brackets. Refer to Section 2A-14-12, Supplemental Inspection Document 55-20-02, for inspection procedures.	330, 340			

*** End of Operation 12 Inspection Items ***

© Cessna Aircraft Company

INSPECTION OPERATION 13

Date: _____

Registration Number: _____

Serial Number: _____

Total Time: _____

1. Description

A. Operation 13 gives Supplemental Inspection Document items that are to be inspected after the first 12,000 hours of operation or 20 years, whichever comes first. The inspection is to be repeated every 3000 hours of operation or 5 years, whichever occurs first, after the initial inspection has been accomplished.

B. Inspection items are given in the order of the zone in which the inspection is to be completed. Frequently, tasks give more information about each required inspection.

C. The right portion of each page gives space for the mechanic's and inspector's initials and remarks. A copy of these pages can be used as a checklist when these inspections are completed.

2. General Inspection Criteria

A. While each of the specified inspection tasks in this section are done, more general inspections of the adjacent areas must be done while access is available. These general inspections are used to find apparent conditions which can need more maintenance.

B. If a component or system is changed after a required task has been completed, then that specified task must be done again to make sure it is correct before the system or component is returned to service.

C. Do a preflight inspection after these inspections are completed to make sure all the required items are correctly serviced. Refer to the Approved Airplane Flight Manual.

TASK	ZONE	MECH	INSP	REMARKS
Inspect aileron hinges, hinge bolts, hinge bearings, and hinge and pushrod attach fittings. Refer to Section 2A-14-18, Supplemental Inspection Document 57-51-01, for inspection procedure.	520, 620			

*** End of Operation 13 Inspection Items ***

© Cessna Aircraft Company

INSPECTION OPERATION 14

Date: _____

Registration Number: _____

Serial Number: _____

Total Time: _____

1. Description

A. Operation 14 gives Supplemental Inspection Document items that are to be inspected after the first 10,000 hours of operation or 20 years, whichever occurs first. The inspection is to be repeated every 5000 hours of operation or at engine overhaul, whichever occurs first, after the initial inspection has been accomplished.

B. Inspection items are given in the order of the zone in which the inspection is to be completed. Frequently, tasks give more information about each required inspection.

C. The right portion of each page gives space for the mechanic's and inspector's initials and remarks. A copy of these pages can be used as a checklist when these inspections are completed.

2. General Inspection Criteria

A. While each of the specified inspection tasks in this section are done, more general inspections of the adjacent areas must be done while access is available. These general inspections are used to find apparent conditions which can need more maintenance.

B. If a component or system is changed after a required task has been completed, then that specified task must be done again to make sure it is correct before the system or component is returned to service.

C. Do a preflight inspection after these inspections are completed to make sure all the required items are correctly serviced. Refer to the Approved Airplane Flight Manual.

TASK	ZONE	MECH	INSP	REMARKS
Inspect tubular engine mount. Refer to Section 2A-14-20, Supplemental Inspection Document 71-20-01, for inspection procedure.	120			

*** End of Operation 14 Inspection Items ***

© Cessna Aircraft Company

INSPECTION OPERATION 15

Date: _____

Registration Number: _____

Serial Number: _____

Total Time: _____

1. Description

A. Operation 15 gives Supplemental Inspection Document items that are to be examined after the first 20 years. The inspection is to be repeated every 10 years after the initial inspection has been accomplished, for airplanes operating in a mild or moderate corrosion environment.

B. Inspection items are given in the order of the zone in which the inspection is to be completed. Frequently, tasks give more information about each required inspection.

C. The right portion of each page gives space for the mechanic's and inspector's initials and remarks. A copy of these pages can be used as a checklist when these inspections are completed.

2. General Inspection Criteria

A. While each of the specified inspection tasks in this section are done, more general inspections of the adjacent areas must be done while access is available. These general inspections are used to find apparent conditions which can need more maintenance.

B. If a component or system is changed after a required task has been completed, then that specified task must be done again to make sure it is correct before the system or component is returned to service.

C. Do a preflight inspection after these inspections are completed to make sure all the required items are correctly serviced. Refer to the Approved Airplane Flight Manual.

TASK	ZONE	MECH	INSP	REMARKS
This interval is for mild/moderate corrosion environment. Inspect the carry-thru bulkhead, upper portions of door posts, and wing attachments. Refer to Section 2A-14-07, Supplemental Inspection Document 53-11-01, for inspection procedure.	210			
This interval is for mild/moderate corrosion environment. Inspect wing for corrosion and missing or loose fasteners. Refer to Section 2A-14-15, Supplemental Inspection Document 57-11-02, for inspection procedure.	510, 520, 610, 620			
This inspection is for mild/moderate corrosion environment. Inspect main landing gear spring for rust or damage to finish. Refer to Section 2A-14-04, Supplemental Inspection Document 32-13-01, for inspection procedure.	730, 740			

*** End of Operation 15 Inspection Items ***

© Cessna Aircraft Company

INSPECTION OPERATION 16

Date: _____

Registration Number: _____

Serial Number: _____

Total Time: _____

1. Description

A. Operation 16 gives Supplemental Inspection Document items that are to be examined after the first 20 years. The inspection is to be repeated every 5 years after the initial inspection has been accomplished, for airplanes operating in a mild or moderate corrosion environment.

B. Inspection items are given in the order of the zone in which the inspection is to be completed. Frequently, tasks give more information about each required inspection.

C. The right portion of each page gives space for the mechanic's and inspector's initials and remarks. A copy of these pages can be used as a checklist when these inspections are completed.

2. General Inspection Criteria

A. While each of the specified inspection tasks in this section are done, more general inspections of the adjacent areas must be done while access is available. These general inspections are used to find apparent conditions which can need more maintenance.

B. If a component or system is changed after a required task has been completed, then that specified task must be done again to make sure it is correct before the system or component is returned to service.

C. Do a preflight inspection after these inspections are completed to make sure all the required items are correctly serviced. Refer to the Approved Airplane Flight Manual.

TASK	ZONE	MECH	INSP	REMARKS
This interval is for mild/moderate corrosion environment. Cabin interior skin panels. Inspect the cabin interior skin panels, frames, and stringers. Refer to Section 2A-14-09, Supplemental Inspection Document 53-30-01, for inspection procedure.	210			

*** End of Operation 16 Inspection Items ***

© Cessna Aircraft Company

INSPECTION OPERATION 17

Date: _____

Registration Number: _____

Serial Number: _____

Total Time: _____

1. Description

A. Operation 17 gives Supplemental Inspection Document items that are to be examined after the first 10 years. The inspection is to be repeated every 5 years after the initial inspection has been accomplished, for airplanes operating in a mild or moderate corrosion environment.

B. Inspection items are given in the order of the zone in which the inspection is to be completed. Frequently, tasks give more information about each required inspection.

C. The right portion of each page gives space for the mechanic's and inspector's initials and remarks. A copy of these pages can be used as a checklist when these inspections are completed.

2. General Inspection Criteria

A. While each of the specified inspection tasks in this section are done, more general inspections of the adjacent areas must be done while access is available. These general inspections are used to find apparent conditions which can need more maintenance.

B. If a component or system is changed after a required task has been completed, then that specified task must be done again to make sure it is correct before the system or component is returned to service.

C. Do a preflight inspection after these inspections are completed to make sure all the required items are correctly serviced. Refer to the Approved Airplane Flight Manual.

TASK	ZONE	MECH	INSP	REMARKS
This interval is for mild/moderate corrosion environment. Inspect flap tracks for corrosion. Refer to Section 2A-14-19, Supplemental Inspection Document 57-53-01, for inspection procedure.	510, 610			

*** End of Operation 17 Inspection Items ***

© Cessna Aircraft Company

INSPECTION OPERATION 18

Date: _____

Registration Number: _____

Serial Number: _____

Total Time: _____

1. Description

A. Operation 18 gives Supplemental Inspection Document items that are to be examined after the first 5 years. The inspection is to be repeated every 5 years after the initial inspection has been accomplished, for airplanes operating in a mild or moderate corrosion environment.

B. Inspection items are given in the order of the zone in which the inspection is to be completed. Frequently, tasks give more information about each required inspection.

C. The right portion of each page gives space for the mechanic's and inspector's initials and remarks. A copy of these pages can be used as a checklist when these inspections are completed.

2. General Inspection Criteria

A. While each of the specified inspection tasks in this section are done, more general inspections of the adjacent areas must be done while access is available. These general inspections are used to find apparent conditions which can need more maintenance.

B. If a component or system is changed after a required task has been completed, then that specified task must be done again to make sure it is correct before the system or component is returned to service.

C. Do a preflight inspection after these inspections are completed to make sure all the required items are correctly serviced. Refer to the Approved Airplane Flight Manual.

TASK	ZONE	MECH	INSP	REMARKS
This interval is for mild/moderate corrosion environment. Inspect wing root rib. Refer to Section 2A-14-16, Supplemental Inspection Document 57-12-01, for inspection procedure.	510, 610			

*** End of Operation 18 Inspection Items ***

© Cessna Aircraft Company

INSPECTION OPERATION 19

Date: _____

Registration Number: _____

Serial Number: _____

Total Time: _____

1. Description

A. Operation 19 gives Supplemental Inspection Document items that are to be examined after the first 10 years. The inspection is to be repeated every 5 years after the initial inspection has been accomplished, for airplanes operating in a severe corrosion environment.

B. Inspection items are given in the order of the zone in which the inspection is to be completed. Frequently, tasks give more information about each required inspection.

C. The right portion of each page gives space for the mechanic's and inspector's initials and remarks. A copy of these pages can be used as a checklist when these inspections are completed.

2. General Inspection Criteria

A. While each of the specified inspection tasks in this section are done, more general inspections of the adjacent areas must be done while access is available. These general inspections are used to find apparent conditions which can need more maintenance.

B. If a component or system is changed after a required task has been completed, then that specified task must be done again to make sure it is correct before the system or component is returned to service.

C. Do a preflight inspection after these inspections are completed to make sure all the required items are correctly serviced. Refer to the Approved Airplane Flight Manual.

TASK	ZONE	MECH	INSP	REMARKS
This interval is for severe corrosion environment. Inspect wing for corrosion and missing or loose fasteners. Refer to Section 2A-14-15, Supplemental Inspection Document 57-11-02, for inspection procedure.	510, 520, 610, 620			
This interval is for severe corrosion environment. Inspect main landing gear spring for rust or damage to finish. Refer to Section 2A-14-04, Supplemental Inspection Document 32-13-01, for inspection procedure.	730, 740			

*** End of Operation 19 Inspection Items ***

© Cessna Aircraft Company

INSPECTION OPERATION 20

Date: _____

Registration Number: _____

Serial Number: _____

Total Time: _____

1. Description

A. Operation 20 gives Supplemental Inspection Document items that are to be examined after the first 10 years. The inspection is to be repeated every 3 years after the initial inspection has been accomplished, for airplanes operating in a severe corrosion environment.

B. Inspection items are given in the order of the zone in which the inspection is to be completed. Frequently, tasks give more information about each required inspection.

C. The right portion of each page gives space for the mechanic's and inspector's initials and remarks. A copy of these pages can be used as a checklist when these inspections are completed.

2. General Inspection Criteria

A. While each of the specified inspection tasks in this section are done, more general inspections of the adjacent areas must be done while access is available. These general inspections are used to find apparent conditions which can need more maintenance.

B. If a component or system is changed after a required task has been completed, then that specified task must be done again to make sure it is correct before the system or component is returned to service.

C. Do a preflight inspection after these inspections are completed to make sure all the required items are correctly serviced. Refer to the Approved Airplane Flight Manual.

TASK	ZONE	MECH	INSP	REMARKS
This interval is for severe corrosion environment. Inspect the carry-thru bulkhead, upper portions of door posts, and wing attachments. Refer to Section 2A-14-07, Supplemental Inspection Document 53-11-01, for inspection procedure.	210			
This interval is for severe corrosion environment. Cabin interior skin panels. Inspect the cabin interior skin panels, frames, and stringers. Refer to Section 2A-14-09, Supplemental Inspection Document 53-30-01, for inspection procedure.	210			

*** End of Operation 20 Inspection Items ***

© Cessna Aircraft Company

INSPECTION OPERATION 21

Date: _____

Registration Number: _____

Serial Number: _____

Total Time: _____

1. Description

A. Operation 21 gives Supplemental Inspection Document items that are to be examined after the first 5 years. The inspection is to be repeated every 2 years after the initial inspection has been accomplished, for airplanes operating in a severe corrosion environment.

B. Inspection items are given in the order of the zone in which the inspection is to be completed. Frequently, tasks give more information about each required inspection.

C. The right portion of each page gives space for the mechanic's and inspector's initials and remarks. A copy of these pages can be used as a checklist when these inspections are completed.

2. General Inspection Criteria

A. While each of the specified inspection tasks in this section are done, more general inspections of the adjacent areas must be done while access is available. These general inspections are used to find apparent conditions which can need more maintenance.

B. If a component or system is changed after a required task has been completed, then that specified task must be done again to make sure it is correct before the system or component is returned to service.

C. Do a preflight inspection after these inspections are completed to make sure all the required items are correctly serviced. Refer to the Approved Airplane Flight Manual.

TASK	ZONE	MECH	INSP	REMARKS
This interval is for severe corrosion environment. Inspect flap tracks for corrosion. Refer to Section 2A-14-19, Supplemental Inspection Document 57-53-01, for inspection procedure.	510, 610			

*** End of Operation 21 Inspection Items ***

© Cessna Aircraft Company

INSPECTION OPERATION 22

Date: _____

Registration Number: _____

Serial Number: _____

Total Time: _____

1. Description

A. Operation 22 gives Supplemental Inspection Document items that are to be examined after the first 3 years. The inspection is to be repeated every 3 years after the initial inspection has been accomplished, for airplanes operating in a severe corrosion environment.

B. Inspection items are given in the order of the zone in which the inspection is to be completed. Frequently, tasks give more information about each required inspection.

C. The right portion of each page gives space for the mechanic's and inspector's initials and remarks. A copy of these pages can be used as a checklist when these inspections are completed.

2. General Inspection Criteria

A. While each of the specified inspection tasks in this section are done, more general inspections of the adjacent areas must be done while access is available. These general inspections are used to find apparent conditions which can need more maintenance.

B. If a component or system is changed after a required task has been completed, then that specified task must be done again to make sure it is correct before the system or component is returned to service.

C. Do a preflight inspection after these inspections are completed to make sure all the required items are correctly serviced. Refer to the Approved Airplane Flight Manual.

TASK	ZONE	MECH	INSP	REMARKS
This interval is for severe corrosion environment. Inspect wing root rib. Refer to Section 2A-14-16, Supplemental Inspection Document 57-12-01, for inspection procedure.	510, 610			

*** End of Operation 22 Inspection Items ***

© Cessna Aircraft Company

INSPECTION OPERATION 23

Date: _____

Registration Number: _____

Serial Number: _____

Total Time: _____

1. Description

A. Operation 23 gives Supplemental Inspection Document items that are to be examined after the first 10,000 hours of operation or 20 years, whichever occurs first. The inspection is to be repeated every 3000 hours of operation or 5 years, whichever occurs first, after the initial inspection has been accomplished, for airplanes operating in a typical usage environment.

B. Inspection items are given in the order of the zone in which the inspection is to be completed. Frequently, tasks give more information about each required inspection.

C. The right portion of each page gives space for the mechanic's and inspector's initials and remarks. A copy of these pages can be used as a checklist when these inspections are completed.

2. General Inspection Criteria

A. While each of the specified inspection tasks in this section are done, more general inspections of the adjacent areas must be done while access is available. These general inspections are used to find apparent conditions which can need more maintenance.

B. If a component or system is changed after a required task has been completed, then that specified task must be done again to make sure it is correct before the system or component is returned to service.

C. Do a preflight inspection after these inspections are completed to make sure all the required items are correctly serviced. Refer to the Approved Airplane Flight Manual.

TASK	ZONE	MECH	INSP	REMARKS
This interval is for the typical usage environment. Inspect stabilator, including spars, ribs, hinge bolts, hinge bearings, and attach fittings. Refer to Section 2A-14-11, Supplemental Inspection Document 55-10-01, for inspection procedures.	330, 340			

*** End of Operation 23 Inspection Items ***

© Cessna Aircraft Company

INSPECTION OPERATION 24

Date: _____

Registration Number: _____

Serial Number: _____

Total Time: _____

1. Description

A. Operation 24 gives Supplemental Inspection Document items that are to be examined after 12,000 hours or 20 years, whichever occurs first. The inspection is to be repeated every 1000 hours or 3 years, whichever occurs first, after the initial inspection has been accomplished, for airplanes operating in a typical usage environment.

B. Inspection items are given in the order of the zone in which the inspection is to be completed. Frequently, tasks give more information about each required inspection.

C. The right portion of each page gives space for the mechanic's and inspector's initials and remarks. A copy of these pages can be used as a checklist when these inspections are completed.

2. General Inspection Criteria

A. While each of the specified inspection tasks in this section are done, more general inspections of the adjacent areas must be done while access is available. These general inspections are used to find apparent conditions which can need more maintenance.

B. If a component or system is changed after a required task has been completed, then that specified task must be done again to make sure it is correct before the system or component is returned to service.

C. Do a preflight inspection after these inspections are completed to make sure all the required items are correctly serviced. Refer to the Approved Airplane Flight Manual.

TASK	ZONE	MECH	INSP	REMARKS
This interval is for typical usage environment. Inspect the root rib and wing attachment lugs. Refer to Section 2A-14-08, Supplemental Inspection Document 53-11-02, for inspection procedure.	210, 211			

*** End of Operation 24 Inspection Items ***

© Cessna Aircraft Company

INSPECTION OPERATION 25

Date: _____

Registration Number: _____

Serial Number: _____

Total Time: _____

1. Description

A. Operation 25 gives Supplemental Inspection Document items that are to be examined after 12,000 hours or 20 years, whichever occurs first. The inspection is to be repeated every 3000 hours or 10 years, whichever occurs first, after the initial inspection has been accomplished, for airplanes operating in a typical usage environment.

B. Inspection items are given in the order of the zone in which the inspection is to be completed. Frequently, tasks give more information about each required inspection.

C. The right portion of each page gives space for the mechanic's and inspector's initials and remarks. A copy of these pages can be used as a checklist when these inspections are completed.

2. General Inspection Criteria

A. While each of the specified inspection tasks in this section are done, more general inspections of the adjacent areas must be done while access is available. These general inspections are used to find apparent conditions which can need more maintenance.

B. If a component or system is changed after a required task has been completed, then that specified task must be done again to make sure it is correct before the system or component is returned to service.

C. Do a preflight inspection after these inspections are completed to make sure all the required items are correctly serviced. Refer to the Approved Airplane Flight Manual.

TASK	ZONE	MECH	INSP	REMARKS
This interval is for typical usage environment. 1. Inspect inboard wing structure for damage and working rivets. 2. Inspect flap actuator support structure. Refer to Section 2A-14-14, Supplemental Inspection Document 57-11-01, for inspection procedure.	510, 610			
This interval is for typical usage environment. Inspect front spar attachments. Refer to Section 2A-14-17, Supplemental Inspection Document 57-30-01, for inspection procedure.	510, 610			

*** End of Operation 25 Inspection Items ***

© Cessna Aircraft Company

INSPECTION OPERATION 26

Date: _____

Registration Number: _____

Serial Number: _____

Total Time: _____

1. Description

A. Operation 26 gives Supplemental Inspection Document items that are to be examined after the first 3000 hours of operation or 5 years, whichever occurs first. The inspection is to be repeated every 1000 hours of operation or 3 years, whichever occurs first, after the initial inspection has been accomplished, for airplanes operating in a severe usage environment.

B. Inspection items are given in the order of the zone in which the inspection is to be completed. Frequently, tasks give more information about each required inspection.

C. The right portion of each page gives space for the mechanic's and inspector's initials and remarks. A copy of these pages can be used as a checklist when these inspections are completed.

2. General Inspection Criteria

A. While each of the specified inspection tasks in this section are done, more general inspections of the adjacent areas must be done while access is available. These general inspections are used to find apparent conditions which can need more maintenance.

B. If a component or system is changed after a required task has been completed, then that specified task must be done again to make sure it is correct before the system or component is returned to service.

C. Do a preflight inspection after these inspections are completed to make sure all the required items are correctly serviced. Refer to the Approved Airplane Flight Manual.

TASK	ZONE	MECH	INSP	REMARKS
This interval is for the severe usage environment. Inspect stabilator, including spars, ribs, hinge bolts, hinge bearings, and attach fittings. Refer to Section 2A-14-11, Supplemental Inspection Document 55-10-01, for inspection procedures.	330, 340			

*** End of Operation 26 Inspection Items ***

© Cessna Aircraft Company

INSPECTION OPERATION 27

Date: _____

Registration Number: _____

Serial Number: _____

Total Time: _____

1. Description

A. Operation 27 gives Supplemental Inspection Document items that are to be examined after the first 6000 hours of operation or 3 years, whichever occurs first. The inspection is to be repeated every 500 hours of operation or 1 year, whichever occurs first, after the initial inspection has been accomplished, for airplanes operating in a severe usage environment.

B. Inspection items are given in the order of the zone in which the inspection is to be completed. Frequently, tasks give more information about each required inspection.

C. The right portion of each page gives space for the mechanic's and inspector's initials and remarks. A copy of these pages can be used as a checklist when these inspections are completed.

2. General Inspection Criteria

A. While each of the specified inspection tasks in this section are done, more general inspections of the adjacent areas must be done while access is available. These general inspections are used to find apparent conditions which can need more maintenance.

B. If a component or system is changed after a required task has been completed, then that specified task must be done again to make sure it is correct before the system or component is returned to service.

C. Do a preflight inspection after these inspections are completed to make sure all the required items are correctly serviced. Refer to the Approved Airplane Flight Manual.

TASK	ZONE	MECH	INSP	REMARKS
This interval is for severe usage environment. Inspect the root rib and wing attachment lugs. Refer to Section 2A-14-08, Supplemental Inspection Document 53-11-02, for inspection procedure.	211			

*** End of Operation 27 Inspection Items ***

© Cessna Aircraft Company

INSPECTION OPERATION 28

Date: _____

Registration Number: _____

Serial Number: _____

Total Time: _____

1. Description

A. Operation 28 gives Supplemental Inspection Document items that are to be examined after the first 6000 hours of operation or 10 years, whichever occurs first. The inspection is to be repeated every 1000 hours of operation or 3 years, whichever occurs first, after the initial inspection has been accomplished, for airplanes operating in a severe usage environment.

B. Inspection items are given in the order of the zone in which the inspection is to be completed. Frequently, tasks give more information about each required inspection.

C. The right portion of each page gives space for the mechanic's and inspector's initials and remarks. A copy of these pages can be used as a checklist when these inspections are completed.

2. General Inspection Criteria

A. While each of the specified inspection tasks in this section are done, more general inspections of the adjacent areas must be done while access is available. These general inspections are used to find apparent conditions which can need more maintenance.

B. If a component or system is changed after a required task has been completed, then that specified task must be done again to make sure it is correct before the system or component is returned to service.

C. Do a preflight inspection after these inspections are completed to make sure all the required items are correctly serviced. Refer to the Approved Airplane Flight Manual.

TASK	ZONE	MECH	INSP	REMARKS
This interval is for severe usage environment. 1. Inspect inboard wing structure for damage and working rivets. 2. Inspect flap actuator support structure. Refer to Section 2A-14-14, Supplemental Inspection Document 57-11-01, for inspection procedure.	510, 610			
This interval is for severe usage environment. Inspect front spar attachments. Refer to Section 2A-14-17, Supplemental Inspection Document 57-30-01, for inspection procedure.	510, 610			

*** End of Operation 28 Inspection Items ***

© Cessna Aircraft Company

INSPECTION OPERATION 29

Date: _____

Registration Number: _____

Serial Number: _____

Total Time: _____

1. Description

A. Operation 29 gives Supplemental Inspection Document items that are to be examined after the first 6000 hours of operation or 10 years, whichever occurs first. The inspection is to be repeated every 1000 hours of operation or 3 years, whichever occurs first, after the initial inspection has been accomplished.

B. Inspection items are given in the order of the zone in which the inspection is to be completed. Frequently, tasks give more information about each required inspection.

C. The right portion of each page gives space for the mechanic's and inspector's initials and remarks. A copy of these pages can be used as a checklist when these inspections are completed.

2. General Inspection Criteria

A. While each of the specified inspection tasks in this section are done, more general inspections of the adjacent areas must be done while access is available. These general inspections are used to find apparent conditions which can need more maintenance.

B. If a component or system is changed after a required task has been completed, then that specified task must be done again to make sure it is correct before the system or component is returned to service.

C. Do a preflight inspection after these inspections are completed to make sure all the required items are correctly serviced. Refer to the Approved Airplane Flight Manual.

TASK	ZONE	MECH	INSP	REMARKS
Inspect Main Landing Gear Retraction Mechanism. Refer to Section 2A-14-03 Supplemental Inspection Document 32-10-01, for inspection procedure.	210			
Inspect main landing gear axle. Refer to Section 2A-14-05, Supplemental Inspection Document 32-13-02, for inspection procedure.	730, 740			

*** End of Operation 29 Inspection Items ***

© Cessna Aircraft Company

SUPPLEMENTAL INSPECTION DOCUMENT

1. Supplemental Inspection Document

A. Introduction

(1) The Supplemental Structural Inspection Program for the Cessna Model 177RG airplane is based on current usage, testing and inspection methods. A practical state-of-the-art inspection program is established for each Principle Structural Element (PSE). A PSE is that structure whose failure, if it remained undetected, could lead to the loss of the airplane. Selection of a PSE is influenced by the susceptibility of a structural area, part, or element to fatigue, corrosion, stress corrosion, or accidental damage.

(2) The Supplemental Structural Inspection Program was developed through the combined efforts of Cessna Aircraft Company, operators of affected 177RG model series airplanes, and the FAA. The inspection program consists of the current structural maintenance inspection, plus supplemental inspections, as required, for continued airworthiness of the airplane as years of service are accumulated. The current inspection program is considered to be adequate in detecting corrosion and accidental damage. The emphasis of the Supplemental Structural Inspection Program is to detect fatigue damage whose probability increases with time.

(3) Since fatigue damage increases at an increasing rate with increasing crack length, earlier detection and repair minimizes the damage and the magnitude of the repair.

(4) **The Supplemental Structural Inspection Program is valid for Model 177RG airplanes with less than 30,000 flight hours. Beyond this, continued airworthiness of the airplane can no longer be assured. Retirement of this airframe is recommended when 30,000 flight hours has been accumulated.**

B. Function

(1) 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. This Supplemental Inspection Document (SID) is only for primary and secondary airframe components. Engine, electrical items and primary and secondary systems are not included in this document. A list is included to show the requirements for the SID program for primary and secondary airframe components.

(a) The airplane has been maintained in accordance with Cessna's recommendations or the equivalent.

(b) If the SID is for a specific part or component, you must examine and evaluate the surrounding area of the parts and equipment. If problems are found outside these areas, report them to Cessna Aircraft Company on a reporting form. Changes can then be made to SID program, if necessary.

(c) The inspections presented in the SID apply to all Model 177RG airplanes. The inspection intervals presented are for unmodified airplanes. Airplanes that have been modified to alter the airplane's design, gross weight or performance may need to be inspected more frequently. Examples of common STCs, which will require modified inspection intervals, include non-Cessna wing extensions, winglets, speed brakes, STOL conversions, vortex generators, tip tanks, under wing tanks, and nonstandard engines. The owner and/or maintenance organization should contact the STC holder(s) or modification originator for obtaining new FAA-approved inspection criteria.

(2) A Corrosion Prevention and Control Program (CPCP) should be established for each airplane. Details of the CPCP are contained in Section 2A-30-00.

2. Principal Structural Elements

A. Principal Structural Elements Description

(1) An airplane component is classified as a Principal Structural Element (PSE) if:

(a) The component contributes significantly to carrying flight and ground loads.

(b) If the component fails, it can result in a catastrophic failure of the airframe.

(2) The monitoring of these PSE's is the main focus of this Supplemental Structural Inspection Program.

(3) Typical examples of PSE's, taken from FAA Advisory Circular 25.571, are shown in Table 1.

© Cessna Aircraft Company

Table 1. Typical Examples of Principal Structural Elements

Wing and Empennage:

Control surfaces, flaps, and their mechanical systems and attachments (hinges, tracks and fittings)

Primary fittings

Principal splices

Skin or reinforcement around cutouts or discontinuities

Skin-stringer combinations

Spar caps

Spar webs

Fuselage:

Circumferential frames and adjacent skin

Doorframes

Pilot window posts

Bulkheads

Skin and single frame or stiffener element around a cutout

Skin and/or skin splices under circumferential loads

Skin or skin splices under fore and aft loads

Skin around a cutout

Skin and stiffener combinations under fore-and-aft loads

Door skins, frames, and latches

Window frames

Landing Gear and Attachments

Engine Support Structure and Mounts

B. Selection Criteria
(1) The factors used to find the PSE's in this document include:
(a) Service Experience
1 Multiple sources of information were used to find the service discrepancies.
a Cessna Service Bulletins and Service Information Letters issued to repair common service discrepancies were examined.
b FAA Service Difficulty Records and Foreign certification agency Service Difficulty Records were examined.
2 Existing analyses were reviewed to identify components in areas that may have exhibited the potential for additional inspection requirements.
3 A review of test results applicable to the design was made to identify the critical areas of the PSE's.
4 The data collected was also used to find a component's susceptibility to corrosion or accidental damage as well as its inspectability.

© Cessna Aircraft Company

3. Usage

A. Aircraft Usage

(1) Aircraft usage data for the SID program is based on the evaluation of the in-service utilization of the aircraft. This data was used to develop the representative fatigue loads spectra. Operational data for development of the Supplemental Structural Inspection Program was obtained from surveys of aircraft operators.

(2) Usage for spectra determination is defined in terms of a single flight representing typical average in-service utilization of the aircraft. This usage reflects the typical in-service flight variation of flight length, takeoff gross weight, payload and fuel.

(3) The flight is defined in detail in terms of a flight profile. The profile identifies the gross weight, payload, fuel, altitude, speed, distance, etc., required to define the pertinent flight and ground parameters needed to develop the fatigue loads. The flight is then divided into operational segments, where each segment represents the average values of the parameters (speed, payload, fuel, etc.) that are used to calculate the loads spectrum.

B. Stress Spectrum.

(1) A fatigue loads spectrum, in terms of gross area stress, was developed for each PSE to be analyzed based on the usage-flight profiles. The spectrum represents the following loading environments: flight loads (gust and maneuver), landing impact, taxi loads and ground-air-ground cycles. The resulting spectrum is a representative flight-by-flight, cycle-by-cycle loading sequence that reflects the appropriate and significant airplane response characteristics.

(2) After reviewing the aircraft usage data and the way in which the surveyed aircraft were flown, two sets of stress spectra were developed. The first flight profile represents typical usage, while the second profile represents severe usage, as described in Paragraph 3 D. below.

C. Fatigue Assessment

(1) The fatigue assessment provides the basis for establishing inspection frequency requirements for each PSE. The evaluation includes a determination of the probable location and modes of damage and is based on analytical results, available test data and service experience. In the analysis, particular attention is given to potential structural condition areas associated with aging aircraft. Examples include:

(a) large areas of structure working at the same stress level, which could develop widespread fatigue damage;

(b) a number of small (less than detectable size) adjacent cracks suddenly joining into a long crack (e.g., as in a line of rivet holes);

(c) redistribution of load from adjacent failing or failed parts causing accelerated damage of nearby parts (i.e., the “domino" effect); and

(d) concurrent failure of multiple load path structure (e.g., crack arrest structure).

(2) Initial inspections of a particular area of structure are based on fatigue analytical results. For locations with long fatigue the maximum initial inspection was limited to 12,000 flight hours.

D. Classifications for Types of Operation

(1) The severity of the operation environment needs to be identified to determine the correct inspection program.

(a) You must first find the category of your airplane’s operation based on average flight length.

(b) You must also find the number of hours and number of landings on the airplane, then find the average flight length based on the formula found below.

Average Flight Length = Number of Flight Hours / Number of Flights

(2) If the average flight length is less than 30 minutes, then you must use the severe inspection time limits. For airplanes with an average flight length greater than thirty minutes, you must find the severity of the operating environment.

(3) Airplanes which have engaged in operations at low altitudes such as pipeline patrol, fish or game spotting, aerial applications, police patrol, sightseeing, livestock management, etc. more than 30% of its life must use the severe inspection time limits.

© Cessna Aircraft Company

(4) For all other operating environments, inspections should be conducted using the TYPICAL Inspection Time Limits.

Corrosion Severity

(1) Prior to conducting the initial corrosion inspection, determine where the airplane has resided throughout its life. If the airplane has resided in a severe corrosion environment for 30% or more of the years to the initial inspection (refer to maps in Section 2A-30-01) use the severe inspection time. Otherwise use the mild/moderate inspection time.

(2) Prior to conducting a repetitive corrosion inspection, determine where the airplane has resided since the last inspection. If the airplane has resided in a severe environment for 30% or more of the years since the last inspection, use the severe inspection time. Otherwise use the mild/ moderate inspection time.

4. Reporting - Communications

A. Discrepancies

(1) For the SID to continue to stay applicable, it is necessary to have a free flow of information between the operator, the FAA and Cessna Aircraft Company. The important information about the inspection results, repairs and modifications done must be supplied to Cessna Aircraft Company in order to assess the effectiveness of the recommended inspection procedures and inspection intervals.

(2) Also, the operator's inspections and reports can find items not included in the SID before. These items will be examined by Cessna Aircraft Company and will be added to the SID for all of the operators, if applicable.

(3) Cessna Customer Service has a system to collect the reports. The applicable forms are included in this document. Copies of these forms are also available from a Cessna Service Station or Cessna Field Service Engineer.

B. Discrepancy Reporting

(1) Discrepancy reporting is essential to provide for adjusting the inspection thresholds and the repeat times as well as adding or deleting PSE's. It may be possible to improve the inspection methods, repairs, and modifications involving the PSE's based on the data reported.

(2) All cracks, multiple cut off fasteners, and corrosion found during the inspection must be reported to Cessna Aircraft Company within ten days. The PSE inspection results are to be reported on a form as shown on the pages that follow.

C. Send the Discrepancy Form

(1) Send all available data, which includes forms, repairs, photographs, sketches, etc., to:

Cessna Aircraft Company
Attn: Customer Service
P.O. Box 7706
Wichita, KS 67277
USA
Phone: (316) 517-5800
Fax: (316) 517-7271

NOTE: This system does not replace the normal channels to send information for items not included in the SID.

D. Cessna Aircraft Company Follow-Up Action

(1) All SID reports will be examined to find if any of the steps are necessary:
- (a) Complete a check of the effect on the structural or operational condition.
- (b) Complete a check of other high-time airplanes to find if a service bulletin shall be issued.
- (c) Find if a reinforcement is required.
- (d) Change the SID if required.

© Cessna Aircraft Company

5. Inspection Methods

A very important part of the SID program is selecting and evaluating state-of-the-art nondestructive inspection (NDI) methods applicable to each PSE.

Potential NDI methods were selected and evaluated on the basis of crack orientation, part thickness and accessibility. Inspection reliability depends on size of the inspection task, human factors (such as qualifications of the inspector), equipment reliability and physical access. Visual, fluorescent, liquid penetrant, eddy current and magnetic particle methods are used. A complete description of those methods are presented in Section 2A-13-01, 'Nondestructive Inspection Methods and Requirements."

6. Related Documents

A. Existing Inspections, Modifications, and Repair Documents
   (1) Cessna has a number of documents that are useful to maintaining continued airworthiness of airplanes.
      (a) Cessna 177RG Service Manuals (P/N D2009-4-13).
      (b) Cessna 177 Illustrated Parts Catalogs (P/N P700-12).
      (c) Cessna Single Engine Service Information Letters and Service Bulletin Summaries.
      (d) Cessna Service Newsletter and Newsletter Summaries.

B. For information regarding these documents, contact:

Cessna Aircraft Company
Customer Service
P.O. Box 7706
Wichita, KS 67277
USA
Phone: (316) 517-5800
Fax: (316) 517-7271

7. Applicability/Limitations

A. This SID is applicable to the Cessna Models 177RG Serial Numbers 177RG0788 thru 177RG1366, and F177RG0139 thru F177RG0177.

B. STC Modifications
   (1) The Cessna 177RG airplanes can have modifications that were done by STCs by other organizations without Cessna Engineering approval. The inspection intervals given in this SID are for unchanged airplanes.
   (2) Airplanes that have been modified to alter the airplane design, gross weight or airplane performance may need to be inspected more frequently. Examples of common STC's not covered by this SID document include non-Cessna wing extensions, winglets, speed brakes, STOL conversions, vortex generators, tip tanks, under wing tanks, and nonstandard engines. The owner and/or maintenance organization should contact the STC holder(s) or modification originator for obtaining new FAA approved inspection criteria.

C. The SID inspection times are based on total airframe hours OR, calender times in service. If a specific airframe component has been replaced, the component is to be inspected, based on total component hours or calendar time requirements. However, any attachment structure that was not replaced when the component was replaced must be inspected, based on the total airframe hours or calendar time requirements. Inspections are due at the lessor of specified flight hours or calender time. The inspections must be completed by June 30, 2014.

8. PSE DETAILS

A. Details
   (1) This section contains the important instructions selected by the rationale process described in Section 2, Principal Structural Elements. Those items are considered important for continued airworthiness of the Model 177RG.

© Cessna Aircraft Company

B. PSE Data Sheets

A data sheet for each PSE is provided in Section 2A-14-XX - Supplemental Inspection Documents. Each data sheet contains the following:

(1) Supplemental Inspection Number
(2) Title
(3) Effectivity
(4) Inspection Compliance
(5) Initial Inspection Interval(s)
(6) Repeat Inspection Interval(s)
(7) Purpose
(8) Inspection Instructions
(9) Access/Location/Zone
(10) Detectable Crack Size
(11) Inspection Procedure
(12) Repair/Modification
(13) Comments

NOTE: Accomplishment of SID inspections does not in any way replace preflight inspections, good maintenance practices, or maintenance and inspections specified in the Model 177RG Service Manual.

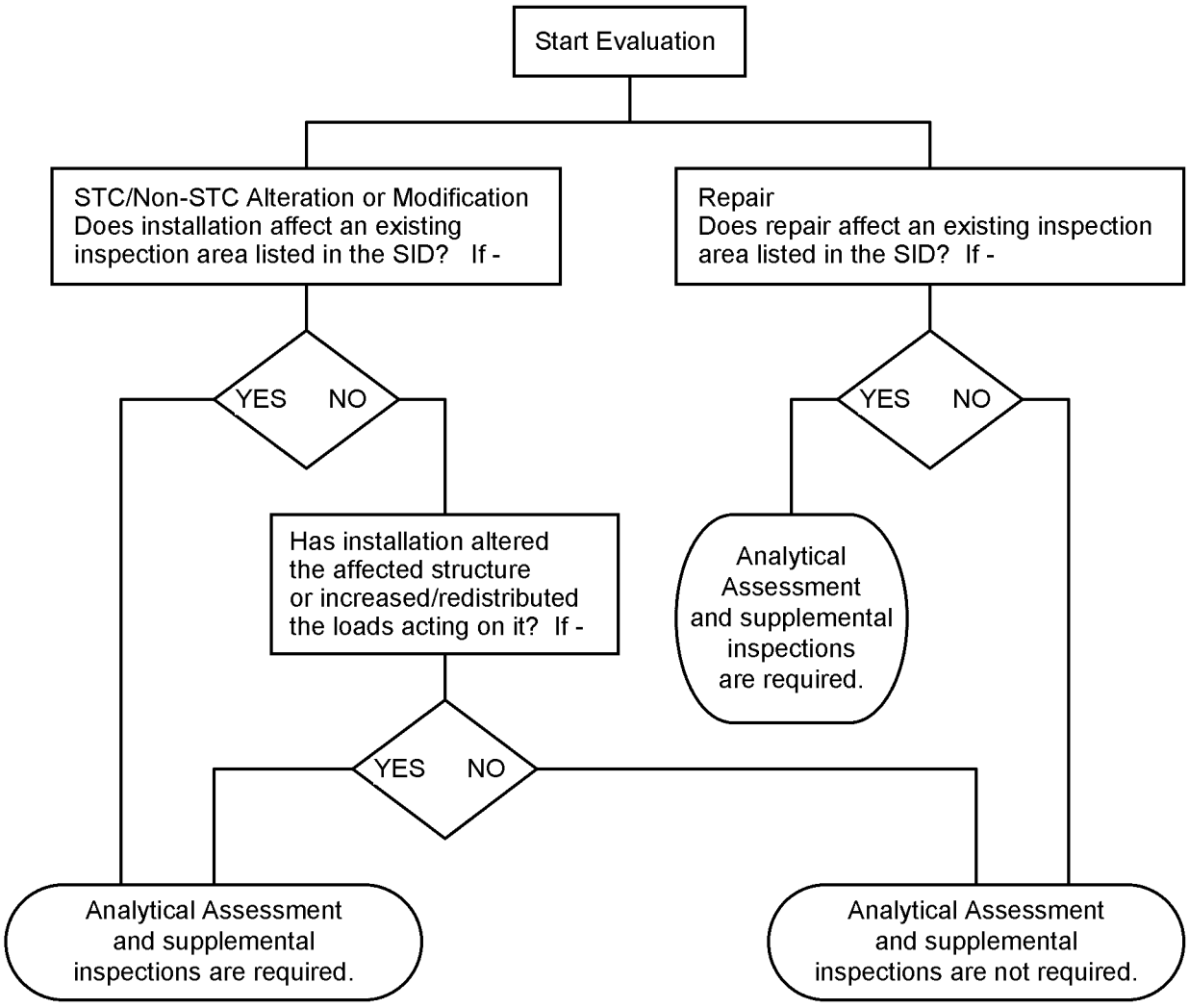
NOTE: Inspection intervals are given in both hour and calender time. After the completion of each initial SID inspection, repeat inspections may be completed based on hour time if the Corrosion Prevention and Control Program (CPCP) in Section 2A-30-00 is included in the airplane maintenance program.

C. Repairs, Alterations and Modifications (RAM)

(1) Repairs, alterations and modifications (RAM) made to PSE's may affect the inspection times and methods presented in the SID. The flowchart in Figure 1 can be used to determine if a new assessment and FAA approved supplemental inspections are required.
(2) Repairs may be made in accordance with Section 17 of the Model 177RG Service Manual or the REPAIR/MODIFICATION Section of the SID.
(3) Repairs not covered by the recommendations in these documents may be coordinated with Cessna Customer Service at telephone 316-517-5800/FAX 316-517-7271.

© Cessna Aircraft Company

A81680



Analytical Assessment Flowchart
Figure 1 (Sheet 1)

© Cessna Aircraft Company

A25373

DISCREPANCY REPORT

SID NO: _____ AIRPLANE LOCATION: _____ S/N OF AIRPLANE: _____

INSPECTION CONDUCTED: Date _____ Airplane Total Hours _____ Cycles _____

Component Total Hours _____ Cycles _____

OWNER NAME _____ OWNER PHONE NUMBER _____

OWNER ADDRESS _____

SERVICE HISTORY:

_____

_____

_____

INSPECTION METHOD/LIMITS:

_____

_____

_____

ACCESS REQUIRED:

_____

_____

_____

REPAIR DESCRIPTION:

_____

_____

_____

COMMENTS:

_____

_____

_____

Enclose all available data including photos, sketches, etc., to:

Cessna Aircraft Company
Attn: SID Program
Customer Service
P.O. Box 7706
Wichita, Kansas USA 67277
FAX 316-517-7271

© Cessna Aircraft Company

NONDESTRUCTIVE INSPECTION METHODS AND REQUIREMENTS

1. GENERAL REQUIREMENTS

A. General
(1) Facilities performing nondestructive inspections described in this section must hold a valid FAA Repair Station Certificate with the appropriate rating in the applicable method of nondestructive testing.
(2) Personnel performing NDT must be qualified and certified to a recognized standard in AC65-31A and comply with all recommendations. The minimum certification is "Level 1 Special" as described in 8.c.(1).
(3) Organizations and personnel that operate under the jurisdiction of a foreign government must use the applicable documentation issued by their regulatory agency to comply with the above requirements.

B. Reporting Results
(1) Use the Discrepancy Report Form found in 2A-13-00, Section 4, Reporting - Communications, to report crack(s) that are found in an inspection. If a part is rejected, refer to the applicable service manual for information to replace the part or repair the part. If a repair for crack(s) is required (for a repair not available in the applicable service manual), contact Cessna Propeller Aircraft Product Support for possible repair instructions or replace the part.
(a) Type of discontinuity.
(b) Location of the discontinuity.
(c) Discontinuity size.
(d) Discontinuity orientation or direction.

2. EDDY CURRENT INSPECTION

A. General
(1) Eddy current inspection is effective for the detection of surface and subsurface cracks in most metals. You do this through induction of eddy currents into the part. These eddy currents will alter the magnetic field around the probe. Changes to the magnetic field are monitored and then interpreted.
(2) You can do eddy current inspection on airplane parts or assemblies where the inspection area is accessible for contact by the eddy current probe. An important use of eddy current inspection is to find cracks caused by corrosion and stress. A second important use is measurement of electrical conductivity.

B. Surface Inspection
(1) General
(a) This is a general procedure for the eddy current method used to find surface discontinuities. This should be used along with specific instructions for inspection in the procedure that referred to this section.
(2) Instrument Parameters
(a) The following equipment was used to develop the inspection procedures referred to in this manual. Alternative equipment may be used if it has the same sensitivity. Refer to the guidelines in this section for more information on equipment parameters.

© Cessna Aircraft Company

NAME	NUMBER	MANUFACTURER
Eddy Current Instrument	Nortec 2000	Olympus NDT Phone: 781-419-3900 Web: http://www.olympusndt.comVM Products
Surface Eddy Current Probe with 1/8 inch coil (NOTE 1)	VM202RAF-6	VM Products, Inc. Phone: (253) 841-2939 Web: http://www.vmproducts.net
Combined Aluminum Surface and Bolthole Eddy Current Reference Standard (NOTE 2)	VM89A	VM Products, Inc.
Combined Steel Surface and Bolthole Eddy Current Reference Standard (NOTE 2)	VM89S	VM Products, Inc.
Combined Stainless Steel Surface and Bolthole Eddy Current Reference Standard (NOTE 2)	VM89SS	VM Products, Inc.

NOTE 1: The style and length of the surface probe will vary with the inspection situation.

NOTE 2: Be sure that the reference standard has the necessary hole size for bolthole inspections. If used only for surface eddy current inspection, it is not necessary that the reference standard have holes. This part number was included to allow the use of a single reference standard for both surface and bolthole eddy current inspection. The reference standard material (aluminum, steel, stainless steel) will vary with the material for inspection.

(b) Instrument Sensitivity

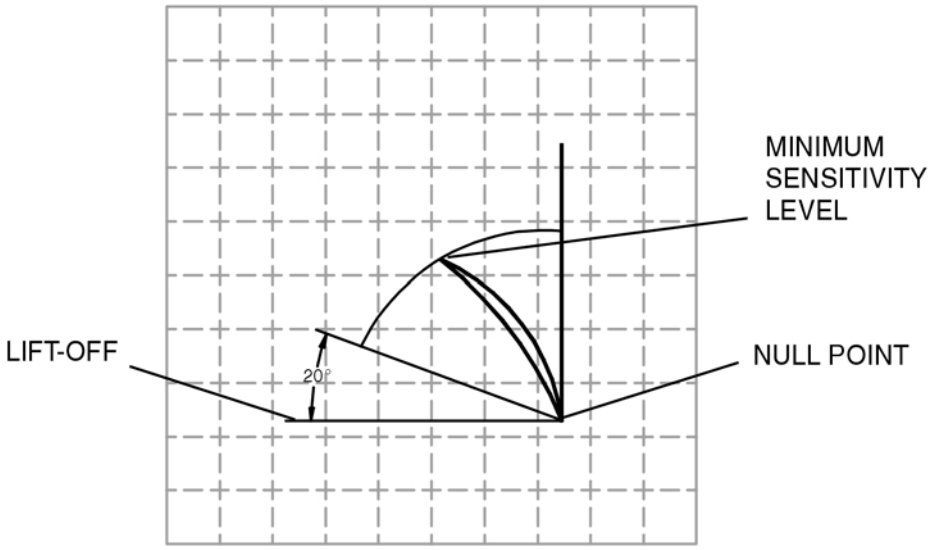
1 Some inspection procedures need instruments that give both phase and amplitude information on a storage cathode ray tube for impedance plane analysis. Impedance plane instruments can be used as an alternative for metered instruments. Metered instruments must not be used as an alternative for impedance plane instruments where the ability to show phase information is necessary.

2 Eddy current instruments with a meter display can be used for surface eddy current inspection.

3 The instrument must have a repeatable signal response which has a signal to noise ratio of more than 3 to 1. Impedance plane instruments must have the resolution to show a signal within the guidelines shown in Figure 1 and Figure 2.

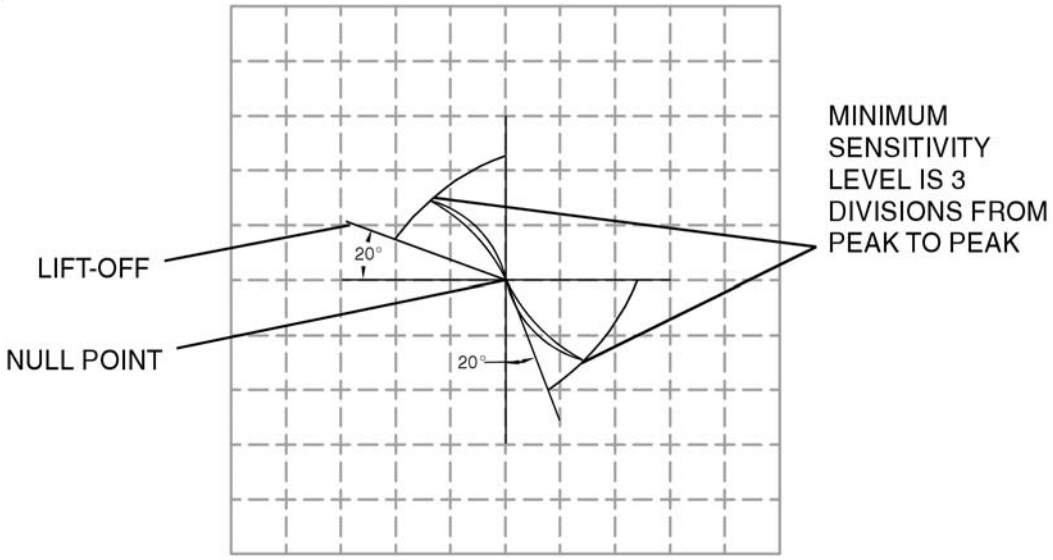
© Cessna Aircraft Company

A10766



Absolute Probe Calibration Range
Figure 1

A16316



Differential Probe Calibration Range
Figure 2

4 The functional performance of the eddy current instrument must be verified at an interval of not more than a year.

(c) Probe Sensitivity

1 The probe may have an absolute or differential coil arrangement.

2 The probe may be shielded or unshielded. A shielded probe is normally recommended.

© Cessna Aircraft Company

3 The probe must have an operating frequency that has the necessary test sensitivity and depth of penetration. For an aluminum part, the frequency should be approximately 200 kHz. For a steel part, the frequency should be 500 to 800 kHz. For a titanium part, the frequency should be 1.0 to 2.0 MHz.

NOTE: Instrument frequency may need adjustment for the instrument and probe combination used.

4 Smaller coil diameters are better for crack detection. A coil diameter of 0.125 inch (3.175 mm) is normally used.
5 For crack detection, the coil will usually contain a ferrite core and external shield.
6 The probe must not give responses from handling pressures, scanning or normal operating pressure variations on the sensing coil which cause the signal to noise ratio to be less than 3 to 1.
7 Teflon tape may be used to decrease the wear on the eddy current probe coil. If Teflon tape is used, make sure the instrument calibration is correct.

(3) Reference Standards
- (a) Nonferrous reference standards should be of an alloy having the same major base metal, basic temper and the approximate electrical conductivity of the material for inspection. Refer to Figure 3.
- (b) Reference standards must have a minimum surface finish of 150 RHR or RMS 165.
- (c) The reference standard must have an EDM notch on the surface of no more than 0.020 inch (0.508 mm) deep.
- (d) The dimensional accuracy of notches must have documentation and be traceable to the National Institute of Standards and Technology (NIST) or applicable foreign agency.
- (e) In some cases a specially fabricated reference standard will be necessary to simulate part geometry, configuration, and the specific discontinuity location. Artificial discontinuities may be used in the reference standard. If a procedure specifies a reference standard made by Cessna Aircraft Company, replacement with a different standard is not allowed.

(4) Surface Condition
- (a) The surface finish of the area for inspection must be 150 RHR or RMS 165 or finer. If the surface finish interferes with the ability to do the inspection, it should be smoothed or removed. See the Maintenance Manual for approved methods.
- (b) The area for inspection must be free of dirt, grease, oil, or other contamination.
- (c) You must have good contact between the probe and the part unless otherwise stated in the specific procedure. Mildly corroded parts must be cleaned lightly with emery cloth. Heavily corroded or painted parts must be lightly abraded and cleaned locally in the area where the inspection will be done.

(5) Instrument Standardization
- (a) The instrument must be set up and operated in accordance with this procedure and the manufacturer's instructions.
- (b) Before you begin the inspection, standardize instrument using the appropriate reference standard. Accuracy must be checked at intervals necessary to maintain consistency during continuous use and at the end of the inspection. Verify the accuracy, if any part of the system is replaced or if any calibrated control settings are changed.
- (c) A 0.020 inch (0.508 mm) deep surface notch or smaller must be used for calibration unless otherwise specified. A typical eddy current surface reference standard with EDM notch depths of 0.010 inch, 0.020 inch, and 0.040 inch (0.254 mm, 0.508 mm, 1.016 mm) is shown in Figure 3.
- (d) Put the surface probe on the reference standard away from the notch.
- (e) Set the null point.
- (f) Lift the surface probe from the reference standard and monitor the display for the lift-off response.
- (g) Adjust the display until the lift-off response goes horizontal and to the left of the null point.
- (h) Put the surface probe on the reference standard and move it across the notch.

© Cessna Aircraft Company

(i) Adjust the instrument to get a minimum separation of three major screen divisions between the null point and the applicable reference notch. The signal from a differential probe should be considered peak to peak.

NOTE: This adjustment is used to set the sensitivity of the inspection. It is not intended as accept or reject criteria.

NOTE: Filters may be used to improve the signal to noise ratio.

(6) Inspection
- (a) It may be necessary to randomly null the instrument on the airplane in the area for inspection to adjust the display for differences between the reference standard and the airplane.
- (b) Whenever possible, the area of inspection must be examined in two different directions that are 90 degrees to each other.
- (c) Examine the inspection area at index steps that are no more than the width of the eddy current test coil. You can do a scan of a part edge as long as the response from edge effect does not hide the calibration notch response. Do not examine areas where edge effect is more than the calibration notch signal. Another inspection method should be used if the edge effect can hide the calibration notch response.
- (d) Whenever possible, a fillet or radius should be examined both transverse and parallel to the axis of the radius. Examine the edge of the fillet or radius transverse to the axis of the radius.
- (e) For the best inspection sensitivity, sealant must be removed from around fasteners. This will allow you to put the surface eddy current probe closer to the edge of the fastener.
- (f) If no guidance is given as to where to examine the part, do an inspection of all part surfaces that you have access to. Make sure to thoroughly examine radii, corners, edges, and areas immediately next to fasteners.

(7) Interpretation
- (a) If an indication is found, carefully repeat the inspection in the opposite direction of probe movement to make sure of the indication. If the indication is still there, carefully monitor the amount of probe movement or rotation needed to cause the response to move off maximum indication response.
- (b) Unless otherwise specified, you must reject a part with a crack.
- (c) The end of a crack is found with the 50 percent method. Move the probe slowly across the end of the crack until a point is reached where the crack signal amplitude has been reduced by 50%. The center of the probe coil is considered to be the end of the crack.
- (d) See the General Requirements section for information on how to report inspection results.

C. Bolthole Inspection

(1) Description
- (a) This is a general procedure for the use of the eddy current method to find discontinuities within holes. This should be used along with specific instructions for inspection in the procedure that referred to this section.

(2) Instrument Parameters
- (a) The following equipment was used to develop the inspection procedures referred to in this manual. Alternative equipment may be used if it has the same sensitivity. Refer to the guidelines in this section for more information on equipment parameters.

© Cessna Aircraft Company

NAME	NUMBER	MANUFACTURER
Eddy Current Instrument	Nortec 2000	Olympus NDT Phone: 781-419-3900 Web: http://www.olympusndt.com
Bolthole Eddy Current Probe with 1/8 inch coil (NOTE 1)	VM101BS-X/XX	VM Products, Inc. Phone: 253-841-2939 Web: http://www.vmproducts.net
Combined Aluminum Surface and Bolthole Eddy Current Reference Standard (NOTE 2)	VM 89A	VM Products, Inc.
Combined Steel Surface and Bolthole Eddy Current Reference Standard (NOTE 2)	VM89S	VM Products, Inc.
Combined Stainless Steel Surface and Bolthole Eddy Current Reference Standard (NOTE 2)	VM89SS	VM Products, Inc.

NOTE 1: Bolthole probe diameter and lengths will vary with the inspection situation.

NOTE 2: Be sure that the reference standard has the necessary hole size for the bolthole inspection. The reference standard material (aluminum, steel, stainless steel) will vary with the material of the hole for inspection.

(b) Instrument Sensitivity

1 Some inspection procedures need instruments that give both phase and amplitude information on a storage cathode ray tube for impedance plane analysis. Impedance plane instruments can be used as an alternative for metered instruments. Metered instruments must not be used as an alternative for impedance plane instruments where the ability to show phase information is necessary.

2 Eddy current instruments with a meter display are allowed for bolthole eddy current inspection.

3 The instrument must have a repeatable signal response which has a signal to noise ratio of more than 3 to 1. Impedance plane instruments must have the resolution to show a signal within the guidelines shown in Figure 1 and Figure 2.

4 The functional performance of the eddy current instrument must be verified at an interval of not more than a year.

(c) Probe Sensitivity

1 The probe may have an absolute or differential coil arrangement.

2 The probe may be shielded or unshielded. A shielded probe is normally recommended.

3 The probe must have an operating frequency that has the necessary test sensitivity and depth of penetration. For an aluminum part, the frequency should be approximately 200 kHz. For a steel part, the frequency should be 500 to 800 kHz. For a titanium part, the frequency should be 1.0 to 2.0 MHz.

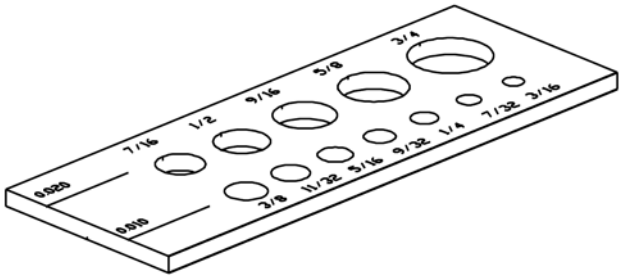
NOTE: Instrument frequency may need adjustment for the instrument and probe combination used.

© Cessna Aircraft Company

4 Smaller coil diameters are better for crack detection. A coil diameter of 0.125 inch (3.175 mm) is normally used.
5 For crack detection, the coil will usually contain a ferrite core and external shield.
6 The probe must not give responses from handling pressures, scanning or normal operating pressure variations on the sensing coil which cause the signal to noise ratio to be less than 3 to 1.
7 Teflon tape may be used to decrease the wear on the eddy current probe coil. If Teflon tape is used, make sure the instrument calibration is correct.

(3) Reference Standard
(a) Nonferrous reference standards should be of an alloy having the same major base metal, basic temper and the approximate electrical conductivity of the material for inspection. Refer to Figure 3.
(b) Reference standards must have a minimum surface finish of 150 RHR or RMS 165.
(c) The reference standard must have a corner notch no larger than 0.050 inch x 0.050 inch (0.127 mm x 0.127 mm) long.
(d) The dimensional accuracy of notches must have documentation and be traceable to the National Institute of Standards and Technology (NIST) or applicable foreign agency.
(e) In some cases a specially fabricated reference standard will be necessary to simulate part geometry, configuration, and/or the specific discontinuity location. Artificial discontinuities may be used in the reference standard. If a procedure specifies a reference standard made by Cessna Aircraft Company, replacement with a different standard is not allowed.

A16318



Typical Bolthole Reference Standard
Figure 3

(4) Inspection Considerations
(a) Surface Condition
1 The surface finish of the area for inspection must be 150 RHR or RMS 165 or finer.
2 The areas for inspection must be free of dirt, grease, oil, or other contamination.
3 You must have good contact between the probe and the part unless otherwise stated in the specific procedure. Mildly corroded parts must be cleaned lightly with emery cloth. Heavily corroded or painted parts must be lightly abraded and cleaned locally in the area on which the probe will be done.
(b) Bolthole eddy current inspection of holes with a bushing installed is not recommended. The inspection will examine the condition of the bushing and not the structure underneath. If a bushing cannot be removed, it is recommended to do a surface eddy current inspection at either end of the hole around the edge of the bushing.

(5) Instrument Standardization
(a) The instrument must be set up and operated in accordance with this procedure and the manufacturer's instructions.
(b) Before you begin the inspection, standardize instrument using the appropriate reference standard. Accuracy must be checked at intervals necessary to maintain consistency during continuous use and at the end of the inspection. Verify the accuracy, if any part of the system is replaced or if any calibrated control settings are changed.

© Cessna Aircraft Company

(c) A corner notch no larger than 0.050 inch x 0.050 inch (0.127 mm x 0.127 mm) must be used for calibration unless otherwise specified. A typical eddy current bolthole reference standard is shown in Figure 3.
(d) Put the bolthole probe into the applicable hole with the coil turned away from the notch in the hole.
(e) Set the null point.
(f) Remove the bolthole probe from the hole and monitor the display for the lift-off response.
(g) Adjust the display until the lift-off response goes horizontal and to the left of the null point.
(h) Put the bolthole probe into the applicable hole and rotate it so the coil moves across the notch in the hole.
(i) Adjust the instrument to get a minimum separation of three major screen divisions between the null point and the applicable reference notch. The signal from a differential probe should be considered peak to peak.

NOTE: This adjustment is used to set the sensitivity of the inspection. It is not intended as accept or reject criteria.

NOTE: Filters may be used to improve the signal to noise ratio.

(6) Inspection
(a) When the inspection procedure does not show the depths where the scans are made for a manual probe, the following general procedure is used.
1 Put the probe into the hole for inspection and find the near edge of the hole. This is the point when the signal is 50% between that for an in-air condition and that fully into the hole. Record the distance between the center of the probe coil and the edge of the probe guide.
2 Move the probe through the hole until the signal indicates that the probe is beyond the far edge of the hole. Locate this edge of the hole as in step 1. Record the distance between the center of the probe coil and the edge of the probe guide.
3 To find the edge of a layer, slowly push the probe through the hole. The response to a layer interface will look similar to that of a crack indication. The difference is that the interface will be seen through 360° of the hole. Measure the distance between the center of the probe coil and the edge of the probe guide when the signal from the interface has been maximized.
4 Use the measurements to find the thickness of the hole and each layer.
5 Examine the hole at a depth of 0.070 inch (1.778 mm) from either edge of the hole, if thickness allows. Also examine the hole at index steps of 0.070 inch (1.778 mm) through the hole. If multiple layers are present in the hole, the inspection parameters must be applied to each layer. If the hole depth or layer depth is less than 0.150 inch (3.810 mm) thick, examine the hole at the center of the depth.
(b) Carefully examine each hole at the applicable depths. Examine the entire circumference of the hole at each depth.
(c) It may be necessary to null the instrument on the airplane in the hole for inspection to adjust the display for differences between the reference standard and the airplane.
(7) Interpretation
(a) If an indication is found, carefully repeat the inspection in the opposite direction to make sure of the indication. If the indication is still there, carefully monitor the amount of probe movement or rotation needed to cause the instrument to move off maximum indication response.
(b) When the eddy current probe is over the center over a crack, the signal will be at maximum and any movement of the probe will cause the signal to begin returning to the normal signal. Corrosion pits, foreign material, and out-of-round holes can cause an instrument response for 20° to 30° of bolthole probe rotation before the indication begins to return to the normal signal.
(c) Unless otherwise specified, you must reject a part with a crack.
(d) See the General Requirements section for information on how to report inspection results.

© Cessna Aircraft Company

D. Conductivity Testing

(1) General

(a) Conductivity testing is effective to find the material properties of aluminum structures. This is done through induction of eddy currents into the part. The eddy currents will alter the magnetic field around the probe. Data are taken and compared to approved ranges for the material tested.

(b) Other materials or geometric changes in the area can influence the conductivity output of the instrument. Therefore, you must have the applicable material specification and engineering drawing.

(c) A typical use is to define material properties following heat application. Examples of such situations include: structure heated by an engine or APU, fire damage, and lightning strike.

(d) This is a general procedure to find the conductivity of aluminum structures. This procedure is used along with the applicable material specification and structural engineering drawings to decide whether the conductivity values are in an approved range.

(2) Instrument Parameters

(a) The following equipment was used to develop the inspection procedures referred to in this manual. Alternative equipment may be used if it has the same sensitivity. Refer to the guidelines in this section for more information on equipment parameters.

NAME	NUMBER	MANUFACTURER
Portable Conductivity Tester	Autosigma 3000	GE Sensing & Inspection Technologies 1 Neumann Way, MD J4 Cincinnati, Ohio 45215 Web: http:\\www.geinspectiontechnologies.com

(b) Inspection Frequency: The instrument must have an operating frequency of 60 kHz.

NOTE: Cessna conductivity information is based on an instrument frequency of 60 kHz. Use of a frequency other than 60 kHz will cause differences in the conductivity reading when compared to the 60 kHz value on thinner material.

(c) Instrument Accuracy: The instrument must be an eddy current instrument that can show the conductivity of aluminum alloys as a percentage of the International Annealed Copper Standard (% IACS). It must have an accuracy of at least +1.0% IACS or - 1.0% IACS through electrically nonconducting films and coatings up to a minimum of 0.003 inch (0.076 mm) thick.

(d) Instrument Sensitivity: The instrument must be sensitive enough to show changes of a minimum of 0.5% IACS over the conductivity range of the aluminum alloys for inspection.

(e) Probe: The probe must have a flat contact surface. The contact surface diameter must not be larger than 0.500 inch (12.700 mm).

(f) To test the lift-off compensation of the probe:

1 Put the probe on a bare standard.

2 Put a nonconducting flat shim of 0.003 inch (0.076 mm) thick between the probe and the standard.

3 The difference in the two values must not exceed 0.5% IACS.

(g) The functional performance of the conductivity instrument must be verified at the intervals defined by the controlling specification or the manufacturer's recommendation, whichever is less.

(3) Calibration Reference Standards

(a) Each instrument must have a minimum of two aluminum alloy instrument conductivity standards. Their values must be:

1 One in the range of 25 to 32% IACS.

2 One in the range of 38 to 62% IACS.

(b) There must be a minimum difference of 10% IACS between the standard for the low end of the range and that for the high end of the range. The conductivity values of the low and the high reference standard must be beyond the expected range of conductivity of the material for inspection.

© Cessna Aircraft Company

(c) The instrument conductivity standards must be certified to be accurate within +0.85% IACS to -0.85% IACS by the comparison method to the laboratory conductivity standards. Use the ASTM B193 procedure in a system per ISO 10012-1 ANSI/NCSL Z540-1 or equivalent foreign documentation.

(4) Inspection Considerations

(a) Temperature: Do not do tests until the temperature of the probe, the standards, and the part or material has been allowed to equalize. The temperatures must stay equalized and constant throughout the test within 5.4 ºF (3 ºC) of each other.

(b) Material Surface Condition

1 The surface finish of the area for inspection must be 150 RHR or RMS 165 or finer.

2 The areas for inspection must be free of dirt, grease, oil, or other contamination.

3 Conductivity measurements may be made through anodize, chemical film, primer, paint, or other nonconducting coatings, if the thickness of these coatings are no more than 0.003 inch (0.076 mm). Coatings with thickness more than this must be removed before conductivity testing.

4 On concave surfaces, a curvature radius of no less than 10 inches is needed. On convex surfaces, a curvature radius of no less than 3 inches can be tested without use of correction factors.

5 The surface of the part must be no smaller than the outside diameter of the probe. The coil must be put in the center on all parts whose dimensions approach this limitation.

(5) Instrument Calibration

(a) The instrument must be set up and operated in accordance with this procedure and the manufacturer's instructions.

(b) Each time the conductivity instrument is used, it must be set up with the instrument conductivity standards before data are taken and checked again at 15 minute intervals during continuous operation. Check calibration at the end of the test.

(c) If the instrument is found to be out of calibration, all measurements taken since the last calibration must be done again.

(6) Inspection

(a) The purpose of the inspection is to collect information to permit the responsible engineering activity to find the material properties in the affected area.

NOTE: Since conductivity values are affected by variations in material properties, material stacking and geometry, conductivity values alone must not be used to decide to accept the affected area without reference to the applicable material specifications and engineering drawings.

(b) Visual Inspection

1 Visually examine the area for indications of possible heat damage. Some signs include paint or metal discoloration and bubbled or peeled paint.

2 Note the location and describe the affected area. This description will be used along with the conductivity values to decide the part disposition. If photographs are used to describe the area, take the picture before you do the conductivity test.

(c) Eddy Current Conductivity Inspection

1 Clean the area for inspection with methods specified in the applicable maintenance manual. Remove all dirt, grit, soot, and other debris that will not allow the probe to have good contact with the structure.

2 Set up the instrument within the general conductivity range of aluminum structures with the reference standards.

3 After the visual inspection, make a reference point. If there is visual evidence of possible heat damage, make the reference point at the center of the area that appears to have been the most affected. If there is no visual evidence of possible heat damage, make the reference point at the center of the area for inspection. The reference point should be approximately in the center of the area of interest.

NOTE: A detailed map is needed of the inspection area to include dimensions to locate the reference point and enough information to allow the responsible engineering activity to find the sites of the conductivity data.

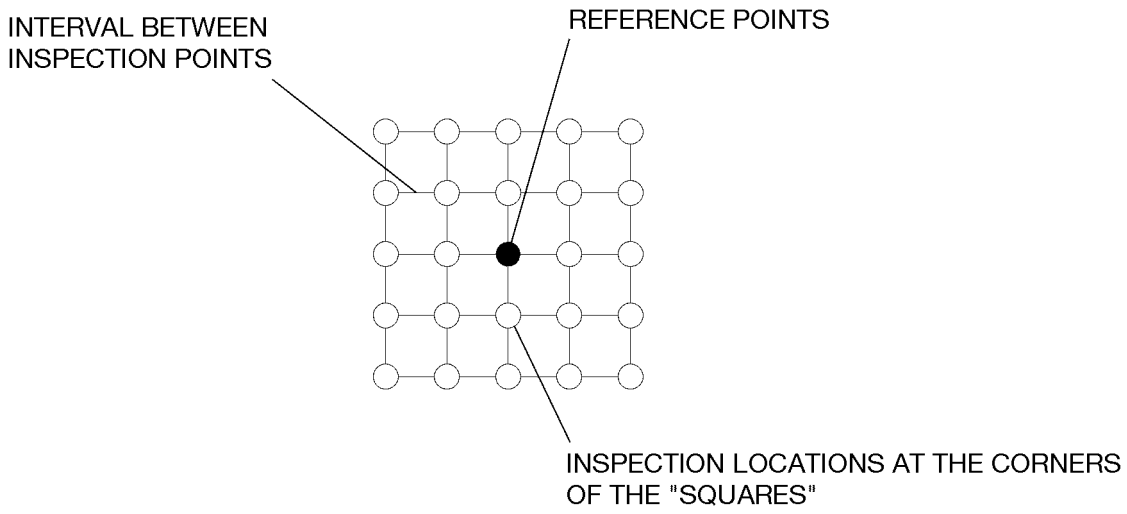
© Cessna Aircraft Company

4 The total area for inspection and the distance between data points will vary with the situation.
   a It is recommended that the distance between data points be no larger than 1.0 inch (25.400 mm).
   b If the visual evidence or the conductivity values suggest rapid changes in severity, the distance between data points should be decreased.
   c It is recommended that the total area for inspection should be larger than the area of visual evidence by a minimum of 2.0 inches (50.800 mm).
   d If the conductivity values continue to change, the area of inspection should be expanded until values remain fairly constant to ensure complete coverage of the area.

5 Locate the reference point at the corner of a square, refer to Figure 4. Take conductivity values working away from the reference point in the increments and distance found in Step 4. Enough information should be included along with the conductivity values so a person unfamiliar with the inspection can find the data point.

NOTE: Structural considerations may not allow the test points to follow the pattern of Figure 4. It is up to the inspector to decide on a pattern that best works with the area for inspection.

A16319



Sample of Conductivity Inspection Grid Pattern
Figure 4

(7) Reporting Results
   (a) Use the Discrepancy Report Form in Section 2A-13-00 to report inspection results. All written descriptions should include enough information so someone not involved in the inspection may interpret the results. Give this information:
      1 Location of the affected area.
      2 A visual description of the affected area.
      3 Location of the reference point and the relative location and interval between conductivity data points.
      4 A map of the area with the conductivity values on it.

© Cessna Aircraft Company

3. PENETRANT INSPECTION

A. General

(1) Penetrant inspection is used to find small cracks or discontinuities open to the surface of the part. Penetrant inspection can be used on most parts or assemblies where the surface is accessible for inspection. The condition of the surface of the inspection area is important to the inspection. The surface must be cleaned of all paint and other surface contamination.

(2) The penetrant is a liquid that can get into surface openings. A typical penetrant inspection uses four basic steps.

(a) The penetrant is put on the surface and allowed to stay for a period of time to let the penetrant get into the surface openings.

(b) The penetrant on the surface is removed.

(c) A developer is used. The purpose of the developer is to pull the penetrant that is left in the surface openings back onto the surface. It also improves the contrast between the indication and the background. This makes indications of discontinuities or cracks more visible.

(d) Interpretation happens. The area for inspection is examined for penetrant on the surface and the cause of the penetrant indication found.

B. Materials and Equipment

(1) The following equipment was used to develop the inspection procedures referred to in this manual. Alternative equipment may be used if it has the same sensitivity. Refer to the guidelines in this section for more information on equipment parameters.

NAME	NUMBER	MANUFACTURER
Fluorescent Penetrant	ZL-27A	Magnaflux Corp. 3624 W. Lake Ave. Glenview, IL 60026 Phone: 847 657-5300 Web: http://www.magnaflux.com
Penetrant Cleaner/Remover	SKC-S	Magnaflux Corp.
Developer	ZP-9F	Magnaflux Corp.
Portable Ultraviolet Light	ZB-23A	Magnaflux Corp.
Light Meter	DSE-2000A	Spectronics Corp. 956 Brush Hollow Road Westbury, New York 11590 Phone: 800 274-8888 Web: http://www.spectroline.com/

(2) Penetrant materials are defined by specific classification per SAE AMS 2644. Materials must meet at minimum the classification listed. This list assumes the use of a portable penetrant inspection kit. If other penetrant inspection equipment is used, refer to industry standard ASTM E 1417 (Standard Practice for Liquid Penetrant Testing) or an equivalent specification for other information on materials and inspection quality instructions.

(a) Type 1 (Fluorescent Penetrant)

(b) Level 3 (Penetrant sensitivity)

© Cessna Aircraft Company

(c) Method C (Solvent Removable Penetrant)
(d) Form d (Nonaqueous Type 1 Fluorescent, Solvent Based Developer)
(e) Class 2 (Non-halogenated Solvent Removers)

NOTE: Do not use Type 2 (Visible Dye Penetrant) on this airplane or components. If Type 2 penetrant was previously used for this inspection, penetrant is no longer an approved method of inspection. Another NDT method such as eddy current must be used to do the inspection.

(3) Only materials approved in the most recent revision of QPL-AMS2644 (Qualified Products List of Products Qualified under SAE Aerospace Material Specification AMS 2644 Inspection Materials, Penetrant) or an equivalent specification may be used for penetrant inspection. All materials must be from the same family group. Do not interchange or mix penetrant cleaners, penetrant materials, or developers from different manufacturers.

CAUTION: Components intended for use in liquid oxygen systems must be examined with special penetrants designated as LOX usage penetrants. These are compatible with a liquid oxygen environment. Reaction between a liquid oxygen environment and penetrant not designed for use in that environment can cause explosion and fire.

C. Lighting Requirements
(1) Do the penetrant inspection in a darkened area where the background intensity of the white light is no more than 2 foot candles. If inspection is done on the airplane, the area must be darkened as much as practical for inspection.
(2) Ultraviolet lights must operate in the range of 320 to 380 nanometers to maximize penetrant fluorescence. The ultraviolet light intensity must be a minimum of 1000 microWatts per square centimeter with the light held 15 inches (381 mm) from the light meter. Let the ultraviolet light warm up for a minimum of 10 minutes before use.
(3) Measure the ultraviolet and ambient white light intensities before each inspection with a calibrated light meter.

D. Inspection
(1) Before Inspection
(a) The penetrant materials and the area for inspection must stay at a temperature between 40 °F and 125 °F (4 °C to 52 °C) throughout the inspection process.
(b) Do the tests needed in the Lighting Requirements section.
(c) Prepare the part or assembly surface for the inspection. Paint must be removed from the surface to let the penetrant get into surface openings. The area must also be clean, dry and free of dirt, grease, oil, or other contamination.

NOTE: Cleaning materials and methods must be approved for use by the applicable Cessna Aircraft Maintenance Manual, Structural Repair Manual, or Component Maintenance Manual.

NOTE: Mechanical methods to clean and remove paint should be avoided when practical. Take care to avoid filing in or sealing the entrance to a surface discontinuity when using mechanical methods to clean or remove paint. Mechanical methods can result a rough surface condition which can cause non-relevant indications.

(2) Apply the Penetrant
(a) Put the penetrant on the part or assembly surface with a brush or swab. Be sure to completely cover the area.

© Cessna Aircraft Company

(b) Leave the penetrant on the surface for a minimum of 15 minutes if the temperature is at least 50 °F (10 °C). Leave the penetrant on the surface for a minimum of 25 minutes if the temperature is less than 50 °F (10 °C).
(c) The maximum dwell time should not be more than one hour except for special circumstances.
(d) Do not let the penetrant to dry on the surface. If the penetrant has dried, completely remove it and process the part again from the start.

(3) Penetrant Removal
(a) Wipe the unwanted penetrant from the surface with a clean dry lint-free cloth.
(b) Dampen a clean lint free cloth with penetrant cleaner.

CAUTION: Do not use the penetrant cleaner directly on the surface of the part or assembly. Do not saturate the cloth used to clean the area with the penetrant cleaner. This may remove penetrant from discontinuities.

(c) Blot the area with the cloth to remove the unwanted penetrant.

NOTE: Do not use the same dampened cloth more than one time. This could cause penetrant removed the first time to be put back on the surface with the second use of the cloth. This could cause non-relevant indications.

(d) Examine the area with the ultraviolet light to make sure that the penetrant has been removed from the surface.
(e) If the penetrant is not sufficiently removed from the surface, repeat these steps until the surface penetrant is removed.

(4) Apply Developer
(a) Be sure the part or assembly is dry.
(b) Put the developer on the surface. The best results happen when there is a very thin coat of developer on the surface. You should be able to barely see the color of the part or assembly through the developer.
(c) If you use a dry powder developer,
1 Thoroughly dust the part or assembly with the developer.
2 Gently blow off the extra powder.
(d) If you use a nonaqueous wet developer,
1 Thoroughly shake the can to be sure that the solid particles in the developer do not settle to the bottom of the liquid.
2 Spray a thin coat of developer on the surface.

NOTE: Take care not to use too much developer. If the developer puddles or begins to drip across the surface, the part or assembly must be processed again from the start.

(e) The developer must be allowed to stay on the surface for a minimum of 10 minutes before interpretation of the results. If the developer dwell time exceeds two hours, the part or assembly must be processed again from the beginning.

(5) Interpretation
(a) Interpretation must happen in the lighting conditions described in the Lighting Parameters section.
(b) The inspector must not wear darkened or light sensitive eye wear. These lenses can reduce the amount of fluorescence you see.
(c) The inspector must enter the darkened area and remain there for a minimum of 1 minute before interpretation to allow the eyes to adapt to the darkened conditions.
(d) Examine the part or assembly with the ultraviolet light.
1 Examine the surface with an 8x magnifier or more to show indications not visible with normal vision.
2 A surface opening will be shown by a fluorescent indication.

© Cessna Aircraft Company

3 A crack will show as a fluorescent line. It will be sharp when it first becomes visible.
4 Monitor indications that become visible during the developer dwell time. This will show the nature of the discontinuity. The amount of penetrant from the discontinuity will give some information as to the size.
5 An indication from a deep discontinuity will become visible again if the area is blotted clean and developer put on again.

(6) After Inspection
(a) Clean the part and inspection area to remove the developer and penetrant.
(b) See the General Requirements section for information on how to report inspection results.

4. MAGNETIC PARTICLE INSPECTION

A. General

(1) Magnetic particle inspection is a nondestructive inspection method to show surface and near-surface discontinuities in parts made of magnetic materials. Alloys that contain a high percentage of iron and can be magnetized make up the ferromagnetic class of metals. Some types of steel may not have sufficient magnet properties to do a successful inspection.

NOTE: Magnetic particle inspection cannot be used to examine nonmagnetic parts or parts with weak magnet properties.

(2) The magnetic particle inspection uses three basic steps.
(a) Create a suitable magnetic field in the part.
(b) Put the magnetic particles on the part.
(c) Examine the area for inspection for magnetic particle patterns on the surface and decide on the cause of the patterns.

B. Materials and Equipment

(1) The following equipment was used to develop the inspection procedures referred to in this manual. Alternative equipment may be used if it has the same sensitivity. Refer to the guidelines in this section for more information on equipment parameters.

NAME	NUMBER	MANUFACTURER
Electromagnetic Yoke	DA-200	Parker Research Corp. 2642 Enterprise Rd. W Clearwater, FL 33528 Phone: 800 525-3935 Web: http://www.parkreshcorp.com/
Fluorescent Magnetic Particle Bath	14AM (Aerosol Can)	Magnaflux Corp. 3624 W. Lake Ave. Glenview, IL 60026 Phone: 847 657-5300 Web: http://www.magnaflux.com
Magnetic Field Strength Indicator	Magnaglo 2480	Magnaflux Corp.
Portable Ultraviolet Light	ZB-23A	Magnaflux Corp.
Light Meter	DSE-2000A	Spectronics Corp. 956 Brush Hollow Road Westbury, New York 11590 Phone: 800 274-8888 Web: http://www.spectroline.com/

© Cessna Aircraft Company

(2) Fluorescent magnetic particles have a high sensitivity and the ability to show small fatigue cracks. Visible or dry magnetic particles do not have the needed sensitivity.

CAUTION: Do not use visible or dry magnetic particles for inspection of airplanes or components.

(3) Refer to industry specifications ASTM E1444, Standard Practice for Magnetic Particle Examination, and ASTM E 709, Standard Guide for Magnetic Particle Examination, or an equivalent specification for requirements for magnetic particle inspection materials and equipment.

(4) Permanent magnets must not be used. The intensity of the magnetic field cannot be adjusted for inspection conditions.

CAUTION: Do not use permanent magnets for inspection of airplanes or components.

(5) Contact prods must not be used. Localized heating or arcing at the prod can damage parts.

CAUTION: Do not use contact prods for inspection of airplanes or components.

(6) Refer to ASTM E 1444, ASTM E 709, or equivalent documentation for instructions to do magnetic particle inspections. This section assumes the use of a portable magnetic particle system. The use of stationary magnetic particle inspection equipment is allowed. Stationary equipment must show that it can meet the inspection sensitivity requirements and is maintained correctly. Refer to the specifications in the Equipment Quality Control section.

C. Lighting Requirements

(1) Do the magnetic particle inspection in a darkened area where the background intensity of the white light is no more than 2 foot candles. If inspection is done on the airplane, the area must be darkened as much as practical for inspection.

(2) Ultraviolet lights must operate in the range of 320 to 380 nanometers to maximize penetrant fluorescence. The ultraviolet light intensity must be a minimum of 1000 microWatts per square centimeter with the light held 15 inches (381 mm) from the light meter. Let the ultraviolet light warm up for a minimum of 10 minutes before use.

(3) Measure the ultraviolet and ambient white light intensities before each inspection with a calibrated light meter.

D. Equipment Quality Control

(1) Refer to ASTM E 1444, ASTM E 709, or equivalent documentation for instructions for the quality control of magnetic particle materials and equipment. This section assumes use of an electromagnetic yoke.

(2) Dead Weight Check

(a) The electromagnetic yoke must be able to lift 10 pounds while on AC current and with the legs spaced 2 to 6 inches apart.

(b) While on DC current, the electromagnetic yoke must be able to lift either 30 pounds with the legs spaced 2 to 4 inches apart or 50 pounds with the legs spaced 4 to 6 inches apart.

E. Inspection

(1) This section assumes the use of a portable magnetic particle system.

(2) Unless otherwise specified, inspection coverage should be 100% of the part surfaces.

NOTE: Be aware of objects near the area of the inspection. Other parts may become magnetized during the inspection process. Be aware of the location of airplane systems that may be sensitive to magnetic fields in the area of the inspection.

(3) Before Inspection

(a) Do the tests needed in the Equipment Quality Control section.

(b) Do the tests needed in the Lighting Requirements section.

© Cessna Aircraft Company

(c) Prepare the part or assembly surface for the inspection. The area must be clean, dry and free of dirt, grease, oil, or other contamination. Magnetic particle inspection can be done through thin layers of paint. If the paint is thick enough to cause interference with the inspection, the paint must be removed. It is recommended to remove paint if more than 0.003 inch thick.

NOTE: Cleaning materials and methods must be approved for use by the applicable Cessna Aircraft Maintenance Manual, Structural Repair Manual, or Component Maintenance Manual.

NOTE: Mechanical methods to clean and remove paint should be avoided when practical. Take care to avoid filing in or sealing the entrance to a surface discontinuity when using mechanical methods to clean or remove paint. Mechanical methods can result a rough surface condition which can cause non-relevant indications.

(4) Create the magnetic field.
(a) Electric current passes through the yoke to create a magnetic field between the legs of the yoke.
1 A discontinuity that is perpendicular to a line directly between the legs of the yoke has the highest probability for detection.
2 There are two types of electrical current. Direct current (DC) is better able to find discontinuities deeper in the part. Alternating current (AC) is more sensitive to discontinuities on the surface of the part. Alternating current is preferred for this inspection.
(b) Position the legs on opposite ends of the part along a line perpendicular to the expected direction of the discontinuity.

NOTE: It may take several inspections in several directions to find discontinuities that are oriented in different directions.

NOTE: Experience with magnetic particle inspection is necessary to find the amount of magnetic flux necessary to show discontinuities.

(c) Spray the magnetic particles on the part.
(d) Energize the electromagnetic yoke for a minimum of 1 second.
(e) Test the magnetic field with the field indicator, Hall effect meter or equivalent equipment. Quality Indicators such as a Pie Gauge or shim can be used to show the strength of the magnetic field. Most quality indicators will need the magnetic particles to be put on the part surface to show magnetic field strength.
1 If the field strength is not sufficient, small discontinuities might be missed. Repeat these steps with more magnetization.
2 If the field strength is too large, discontinuities might be hidden behind non-relevant fluorescent indications. Demagnetize the part and then repeat these steps with decreased magnetization.

NOTE: If the strength of the magnetization cannot be adjusted on the electromagnetic yoke, adjust the distance between the legs to adjust the strength of the magnetic field. Put the legs closer together to increase the magnetic field. Put the legs farther apart to decrease the magnetic field.

(f) Allow 30 seconds for the magnetic particles to collect at discontinuities. With wet magnetic particles, if practical, tilt the part to allow the magnetic particles to flow across the expected direction of the discontinuity.
(5) Interpretation
(a) Interpretation must happen in the lighting conditions described in the Lighting Parameters section.

© Cessna Aircraft Company

(b) The inspector must not wear darkened or light sensitive eye wear. These lenses can reduce the amount of fluorescence you see.
(c) The inspector must enter the darkened area and remain there for a minimum of 1 minute before interpretation to allow the eyes to adapt to the darkened conditions.
(d) Examine the part or assembly with the ultraviolet light.
1 A leakage field will be shown by a fluorescent pattern of the magnetic particles. This is called an indication.
2 An indication caused by a discontinuity on the part surface will be a sharp, distinct pattern.
3 An indication caused by a subsurface discontinuity will usually be broader and fuzzier compared to an indication of a surface discontinuity.
4 Be aware that indications which are not relevant to the inspection may be caused by surface conditions or geometry.

(6) Demagnetize Part
(a) Unless otherwise specified, demagnetize the part after the inspection.
1 Put the electromagnetic yoke on AC current setting and the magnetic field strength to maximum.

NOTE: AC current is preferred, but DC current may be needed for increased penetration into the part.

2 Space the legs of the electromagnetic yoke to allow the part to pass between them.
3 Put the part between the legs of the electromagnetic yoke.
4 Energize the yoke with a magnetic field higher than that used for the inspection. Do not allow the part to touch the legs of the electromagnetic yoke.
5 Pull the electromagnetic yoke away from the part.
6 De-energize the electromagnetic yoke when about 2 feet from the part.
7 Test the remaining magnetic field in the part with the field indicator, Hall effect meter or equivalent equipment.
8 If the remaining magnetic field in the part is no more than 3 Gauss, the part is considered demagnetized. If more than 3 Gauss, repeat the demagnetization procedure.

(7) After Inspection
(a) See the General Requirements section for information on how to report inspection results.
(b) Completely remove the magnetic particles from the part or assembly.
(c) Reapply any protective coatings to the part to prevent corrosion.

NOTE: Materials and methods must be approved for use by the applicable Cessna Aircraft Maintenance Manual, Structural Repair Manual, or Component Maintenance Manual.

5. ULTRASONIC THICKNESS TESTING

A. General
(1) A common application for ultrasonic inspection is to find material thickness. The instrument will measure the time-of-flight of the ultrasonic wave through the part. This procedure will show you how to find the thickness of metal after removal of corrosion or a blending procedure.

B. Equipment
(1) The following equipment was used to develop the inspection procedures referred to in this manual. Alternative equipment may be used if it has the same sensitivity. Refer to the guidelines in this section for more information on equipment parameters.

© Cessna Aircraft Company

NAME	NUMBER	MANUFACTURER
Ultrasonic Thickness Gage (with A-scan ability)	25 Multiplus	Olympus NDT Phone: 781-419-3900 Web: http://www.olympusndt.com
20 MHz Ultrasonic Transducer, 0.125 inch diameter	M208	Olympus NDT
Sonopen, 15 MHz, 0.125 inch diameter	V260-SM	Olympus NDT
Couplant (Water Based)	Ultragel II	Sonotech, Inc. 774 Marine Drive Bellingham, WA 98225 Phone: 360-671-9121 Web: http://www.sonotech-inc.com/

(2) Instrument
  (a) The expected material thickness must be within the measurement range of the instrument.
  (b) The instrument resolution must be a minimum of 0.001 inch (0.0254 mm).
  (c) It is recommended that the instrument have an A-scan display. This will let the operator monitor the interaction between the signal and the gating of the instrument.

(3) Transducer
  (a) The transducer must have a diameter of no more than 0.375 inch (9.525 mm) and a delay line.
  (b) The recommended frequency is 5 to 10 MHz for material 0.5 inch (12.700 mm) thick or more an 10 to 20 MHz for material less than 0.5 inch (12.700 mm) thick.

(4) Reference Standard
  (a) The reference standard must be of the same base alloy as the metal for measurement.
  (b) Gage material can be used for a reference standard. It should be as close as practical to the alloy and temper of the material for test.

NOTE: When gage material is used; mechanically measure the thickness of the material.

  (c) The reference standard must have enough thickness range that one step will be thinner and one step thicker than the expected thickness range of the material.

C. Calibration
(1) Set up the instrument with the manufacturer's instructions.
(2) Choose steps on the reference standard for the calibration. It is recommended that there is a step between the chosen steps.

NOTE: It is important that the expected material thickness be between the range of the steps chosen on the reference standard.

(3) Calibrate the instrument on the chosen steps of the reference standard. If there are any steps between the calibration steps, use them to make sure of the calibration.

D. Inspection
(1) The area must be clean and free of grease, dirt, corrosion or other material that may affect the inspection.
(2) Examine the area for inspection. Record material thickness to the nearest 0.001 inch.
(3) Take enough measurements that the minimum thickness is found in the blended area.
(4) If possible, take a measurement in an adjacent area to get a nominal thickness.
(5) See the General Requirements section for information on how to report inspection results.

E. After Inspection
(1) See the General Requirements section for information on how to report inspection results.
(2) Clean any couplant off the area.

© Cessna Aircraft Company

6. VISUAL INSPECTION

A. General

(1) Visual inspection is the most common form of airplane inspection. Visual inspection can find a wide variety of component and material surface discontinuities, such as cracks, corrosion, contamination, surface finish, weld joints, solder connections, and adhesive disbonds. The results of a visual inspection may be improved with the use of applicable combinations of magnifying instruments, borescopes, light sources, video scanners, and other devices. The use of optical aids for visual inspection is recommended. Optical aids magnify discontinuities that cannot be seen by the unaided eye and also allow inspection in inaccessible areas.

(2) Personnel that do visual inspection tasks do not need to have certification in nondestructive inspection.

B. Visual Aids

(1) Structure and components that must be routinely examined are sometimes difficult to access. Visual inspection aids such as a powerful flashlight, a mirror with a ball joint, and a 10 power magnifying glass are needed for the inspection.

(2) Flashlights used for visual inspection should be suitable for industrial use and, where applicable, safety approved for use in hazardous atmospheres such as airplane fuel tanks. These characteristics should be considered when selecting a flashlight: foot-candle rating; explosive atmosphere rating; beam spread (adjustable, spot, or flood); efficiency (battery usage rate); brightness after extended use; and rechargeable or standard batteries. Inspection flashlights are available in several different bulb brightness levels:

(a) Standard incandescent (for long-battery life).
(b) Krypton (for 70% more light than standard bulbs).
(c) Halogen (for up to 100% more light than standard bulbs).
(d) Xenon (for over 100% more light than standard bulbs)

(3) An inspection mirror is used to view an area that is not in the normal line of sight. The mirror should be of the applicable size to easily see the component and a swivel joint tight enough to keep its position.

(4) A single converging lens is often referred to as a simple magnifier. Magnification of a single lens can be found by the equation M = 10/f. In this equation, “M” is the magnification, “f” is the focal length of the lens in inches, and “10” is a constant that represents the average minimum distance at which objects can be distinctly seen by the unaided eye. For example, a lens with a focal length of 5 inches has a magnification of 2, or is said to be a two-power lens. A 10-power magnifier is needed for inspection.

(5) Borescopes

(a) These instruments are long, tubular, precision optical instruments with built-in illumination, designed to allow remote visual inspection of otherwise inaccessible areas. The tube, which can be rigid or flexible with a wide variety of lengths and diameters, provides the necessary optical connection between the viewing end and an objective lens at the distant or distal tip of the borescope.

(b) Optical Designs. Typical designs for the optical connection between the borescope viewing end and the distal tip are:

1 A rigid tube with a series of relay lenses;
2 A flexible or rigid tube with a bundle of optical fibers; and
3 A flexible or rigid tube with wiring that carries the image signal from a Charge Couple Device (CCD) imaging sensor at the distal tip.

NOTE: Instruments used as an aid for visual inspection must be capable of resolving four line pairs per mm (4lp/mm).

(c) These designs can have either fixed or adjustable focus of the objective lens at the distal tip. The distal tip may also have prisms and mirrors that define the direction and field of view. A fiber optic light guide with white light is generally used in the illumination system. Some long borescopes use light-emitting diodes at the distal tip for illumination.

© Cessna Aircraft Company

C. Visual Inspection Procedures

(1) Factors That Can Affect Inspection

(a) Lighting. Get sufficient lighting for the part or area. Do not look into glare to do the inspection.

(b) Comfort. The comfort (temperature, wind, rain, etc.) of the inspector can be a factor in visual inspection reliability.

(c) Noise. Noise levels are important. Too much noise reduces concentration, creates tension, and prevents effective communication. All these factors will increase the chance of errors.

(d) Inspection Area Access. Ease of access to the inspection area has been found to be of major importance in reliable visual inspection. Access includes that into an inspection position (primary access) and to do the visual inspection (secondary access). Poor access can affect the interpretation of discontinuities, decisions, motivation, and attitude.

(2) Preliminary Inspection. Do a preliminary inspection of the general area for foreign objects, deformed or missing fasteners, security of parts, corrosion, and damage. If the location is not easy to access, use visual aids such as a mirror or borescope.

(3) Corrosion. Remove, but do not do a treatment of any corrosion found during preliminary inspection. Do a treatment of corrosion found after the entire visual inspection is complete.

NOTE: If you leave corrosion in place or do a treatment of the corrosion before inspection, it may hide other discontinuities.

(4) Clean. After the preliminary inspection, clean the areas or surface of the parts for inspection. Do not remove the protective finish from the part.

(5) Inspection. Carefully examine the area for discontinuities, with optical aids as needed. An inspector normally should have available applicable measuring devices, a flashlight, and a mirror.

(a) Surface cracks. Refer to Figure 5. To look for surface cracks with a flashlight:

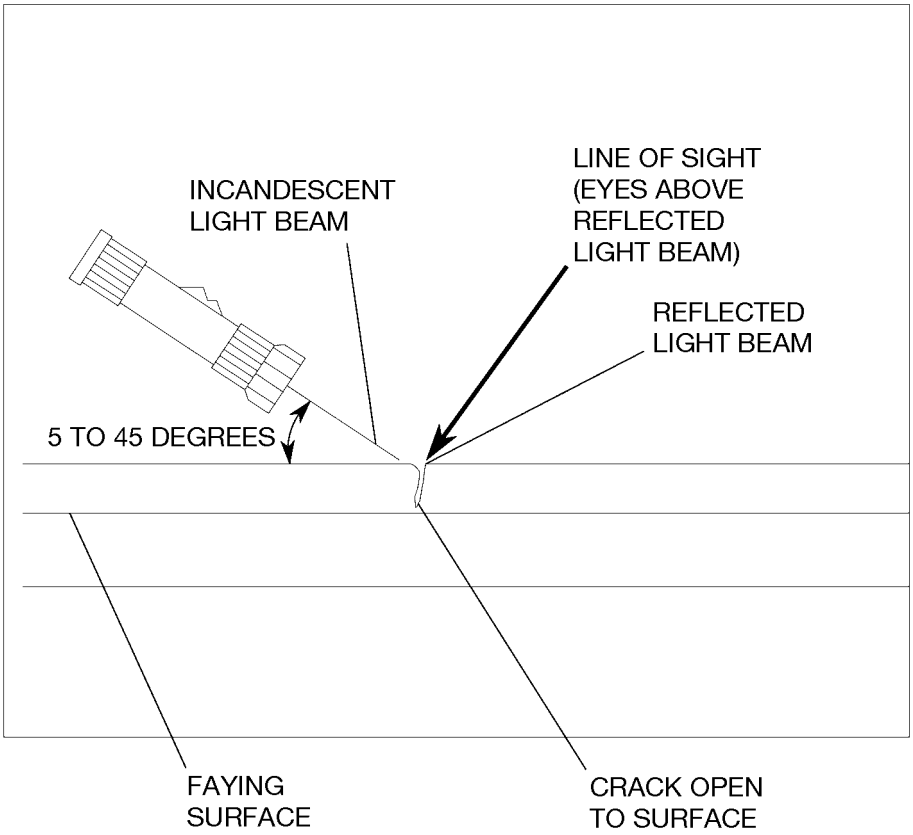
1 Point the light beam toward the face with between a 5° and 45° angle to the surface. Refer to Figure 5.

2 Do not point the light beam at an angle such that the reflected light beam shines directly into the eyes.

3 Keep the eyes above the reflected light beam. Measure the size of any cracks found with the light beam at right angles to the crack and trace the length.

© Cessna Aircraft Company

A81712



Visual Inspection for Cracks
Figure 5

4 Use a 10-power magnifier to make sure of a suspected crack.

(b) Hardware and Fasteners. Examine rivets, bolts, and other hardware for looseness, integrity, proper size and fit, and corrosion. Dished, cracked, or missing rivet heads and loose rivets should be identified and recorded.

(c) Control Systems. Examine cables, control rods, rod ends, fairleads, pulleys, and all other items for integrity, structural soundness, and corrosion.

(d) Visual Inspection for Corrosion. Inspection of an airplane for corrosion follows a systematic pattern.

1 Clues. The airplane is initially observed for clues about the care with which it has been maintained.

2 Locations. Examine likely corrosion sites. These include galleys and food service areas, lavatories, bilges, tank drains, and fastenings. When debris is found, it should be examined for iron oxide and the characteristically white powdery aluminum hydride. Biological contamination (mold, algae), which may feel greasy or slippery, frequently causes corrosion since it changes the acidity of any moisture it contains. Caulking and sealing compounds should be examined for good bond since corrosion can get under such materials. Nutplates should be examined for corrosion under them. Tap tests should be done often and the cause of any dull sounding areas found. The omission of fuel additives by some fuel vendors can increase the deterioration of fuel tanks on a small airplane. In such cases, it is necessary to drain

© Cessna Aircraft Company

tanks and examine them with lighted borescopes or other aids. Flight and control surfaces are difficult to inspect since access is difficult. Extensive use of aids is recommended for such locations.

NOTE: The use of a center punch or awl to indent a surface should be used with care, since awl or center punch pricks can cause fatigue cracks.

3 Sites. Careful detailed inspection of corrosion sites is then done to measure the amount of corrosion. You may need to remove skin panels or other measures to further measure the damage.

(e) Disbonds. Many airplanes have adhesive bond panels. These may have disbonds and adhesive failures. Remember that, in adhesively bonded structures, evidence of corrosion can signal the loss of bond integrity. A good example of this condition is the pillowing which appears behind rivets. If the structure is bonded as well as riveted, the bond may be damaged where pillowing exists.

(f) Painted Surfaces. Examine painted surfaces for chipped, missing, loose or blistered paint and for signs of corrosion.

(g) Other surface discontinuities. Look for other surface discontinuities, such as discoloration from overheating; buckled, bulged, or dented skin; cracked, chafed, split, or dented tubing; chafed electrical wiring; delamination of composites; and damaged protective finishes.

© Cessna Aircraft Company

LISTING OF SUPPLEMENTAL INSPECTIONS

1. Supplemental Inspection Procedures

A. Each of the supplemental inspections listed in this section has the instructions to do each Nondestructive Testing procedure needed.

B. Procedure
(1) Each 2A-14-XX section has the details of the inspection and, if needed, a reference to the Nondestructive Testing procedure for that inspection.
(2) The supplemental inspections that reference a Nondestructive Testing procedure will refer to 2A-13-01 document for the details of the procedure.

C. If an airplane has exceeded the inspection limits given, the inspection must be done before June 30, 2014. Inspections in subsequent revisions to the SID shall be accomplished in accordance with the requirements of the revised inspection.

D. Service Information Letters/Service Bulletins
(1) In addition to the Model 177RG Service Manual, the following service information will be required to complete the SID inspections (2A-14-XX document sections).

Bulletin	Title	Associated Service Kit
SEB07-5	Pilot and Copilot Secondary Seat Stop Installation	SK210-174A
SEB96-07	AN3-5A Bolt Inspection/Replacement	
SEB89-01	Stabilator Balance Weight Arm Bracket Inspection/ Replacement	
SE79-37	Main Gear Actuator Rod End	
SNL86-44	Flight Control Surface Balancing Information	

2. Supplemental Inspections

DETAILS FOUND IN SECTION 2A-14-XX	SUPPLEMENTAL INSPECTION NUMBER	TITLE	INSPECTION COMPLIANCE (Refer to Note 1)		INSPECTION OPERATION
			INITIAL	REPEAT	
2A-14-01	27-20-01	Rudder Pedal Torque Tube Inspection	10,000 Hours or 20 Years	3000 Hours or 5 years	9
2A-14-02	27-30-02	Stabilator Trim Pulley Brackets and Actuator Bracket Structure Inspection	1000 Hours	1000 Hours	7
2A-14-03	32-10-01	Main Landing Gear Retraction System Inspection	6000 Hours or 10 Years	1000 Hours or 3 Years	29

© Cessna Aircraft Company

DETAILS FOUND IN SECTION 2A-14-XX	SUPPLEMENTAL INSPECTION NUMBER	TITLE	INSPECTION COMPLIANCE (Refer to Note 1) INITIAL	REPEAT	INSPECTION OPERATION
2A-14-04	32-13-01	Landing Gear Spring Corrosion Inspection	MILD/ MODERATE 20 Years	MILD/ MODERATE 10 Years	15
			SEVERE 10 Years	SEVERE 5 Years	19
2A-14-05	32-13-02	Main Landing Gear Axle Inspection	6000 Hours or 10 Years	1000 Hours or 3 Years	29
2A-14-06	32-20-01	Nose Gear Torque Link and Fork Inspection	3000 Hours or 5 Years	3000 Hours or 5 Years	10
2A-14-07	53-11-01	Carry-Thru Spar Corrosion Inspection	MILD/ MODERATE 20 Years	MILD/ MODERATE 10 Years	15
			SEVERE 10 Years	SEVERE 3 Years	20
2A-14-08	53-11-02	Carry-Thru Spar Inspection	TYPICAL 12,000 Hours or 20 Years	TYPICAL 1000 Hours or 3 Years	24
			SEVERE 6000 Hours or 3 Years	SEVERE 500 Hours or 1 Year	27
2A-14-09	53-30-01	Cabin Interior Skin Panels Corrosion Inspection	MILD/ MODERATE 20 Years	MILD/ MODERATE 5 Years	16
			SEVERE 10 Years	SEVERE 3 Years	20
2A-14-10	53-47-01	Seat Rails and Seat Rail Structure Corrosion Inspection	10 Years	5 Years	11
2A-14-11	55-10-01	Stabilator and Attachments Inspection	TYPICAL 10,000 Hours or 20 Years	TYPICAL 3000 Hours or 5 Years	23
			SEVERE 3000 hours or 5 Years	SEVERE 1000 Hours or 3 Years	26
2A-14-12	55-20-02	Stabilator Balance Weight Arm Bracket Inspection	2000 Hours or 20 Years	200 Hours or 1 Year	12

© Cessna Aircraft Company

DETAILS FOUND IN SECTION 2A-14-XX	SUPPLEMENTAL INSPECTION NUMBER	TITLE	INSPECTION COMPLIANCE (Refer to Note 1) INITIAL	REPEAT	INSPECTION OPERATION
2A-14-13	55-30-01	Vertical Stabilizer, Rudder and Attachments Inspection	10,000 Hours or 20 Years	3000 Hours or 5 Years	9
2A-14-14	57-11-01	Wing Structure Inspection	TYPICAL 12,000 Hours or 20 years	TYPICAL 3000 Hours or 10 Years	25
			SEVERE 6000 Hours or 10 Years	SEVERE 1000 Hours or 3 Years	28
2A-14-15	57-11-02	Wing Structure Corrosion Inspection	MILD/ MODERATE 20 Years	MILD/ MODERATE 10 Years	15
			SEVERE 10 Years	SEVERE 5 Years	19
2A-14-16	57-12-01	Wing Root Rib Corrosion Inspection	MILD/ MODERATE 5 Years	MILD/ MODERATE 5 Years	18
			SEVERE 3 Years	SEVERE 3 Years	22
2A-14-17	57-30-01	Wing Front Spar Inspection	TYPICAL 12,000 Hours or 20 Years	TYPICAL 3000 Hours or 10 Years	25
			SEVERE 6000 Hours or 10 Years	SEVERE 1000 Hours or 3 Years	28
2A-14-18	57-51-01	Aileron Support Structure Inspection	12,000 Hours or 20 Years	3000 Hours or 5 Years	13
2A-14-19	57-53-01	Flap Tracks Inspection	MILD/ MODERATE 10 Years	MILD/ MODERATE 5 Years	17
			SEVERE 5 Years	SEVERE 2 Years	21
2A-14-20	71-20-01	Engine Mount Inspection	10,000 Hours or 20 Years	5000 Hours or at Engine Overhaul	14

NOTE 1: Time limits for the initial inspections are set by either flight hours or calendar time, whichever occurs first. Except for Section 2A-14-20, Supplemental Inspection Document 71-20-01, corresponding calendar inspection times are per "REPEAT" flight hour or calendar time specified, whichever occurs first. Corrosion Prevention and Control Program (CPCP) remain calendar time based. If the initial inspection has been completed, and a CPCP is in effect, then repeat inspections are based entirely on flight hours.

© Cessna Aircraft Company

SUPPLEMENTAL INSPECTION NUMBER: 27-20-01

1. TITLE:
Rudder Pedal Torque Tube Inspection

2. EFFECTIVITY
177RG0788 thru 177RG1366, F177RG0139 thru F177RG0177

		INSPECTION COMPLIANCE		
ALL USAGE:	**INITIAL**	10,000 Hours	or	20 Years **(NOTE)**
	REPEAT	3000 Hours	or	5 Years **(NOTE)**

NOTE: Refer to Note 1, Section 2A-14-00

3. PURPOSE
To verify integrity of the rudder pedal torque tube assembly.

4. INSPECTION INSTRUCTIONS

A. Inspect rudder pedal torque tubes and cable attachment arms for cracks or weld failures. Refer to Figure 1.
(1) Clean area before inspecting if grime or debris are present.

B. Inspect the gear sector attachment to rudder bars for cracks or weld failures.

C. Inspect for rust, corrosion, or traces of corrosion product.

5. ACCESS AND DETECTABLE CRACK SIZE

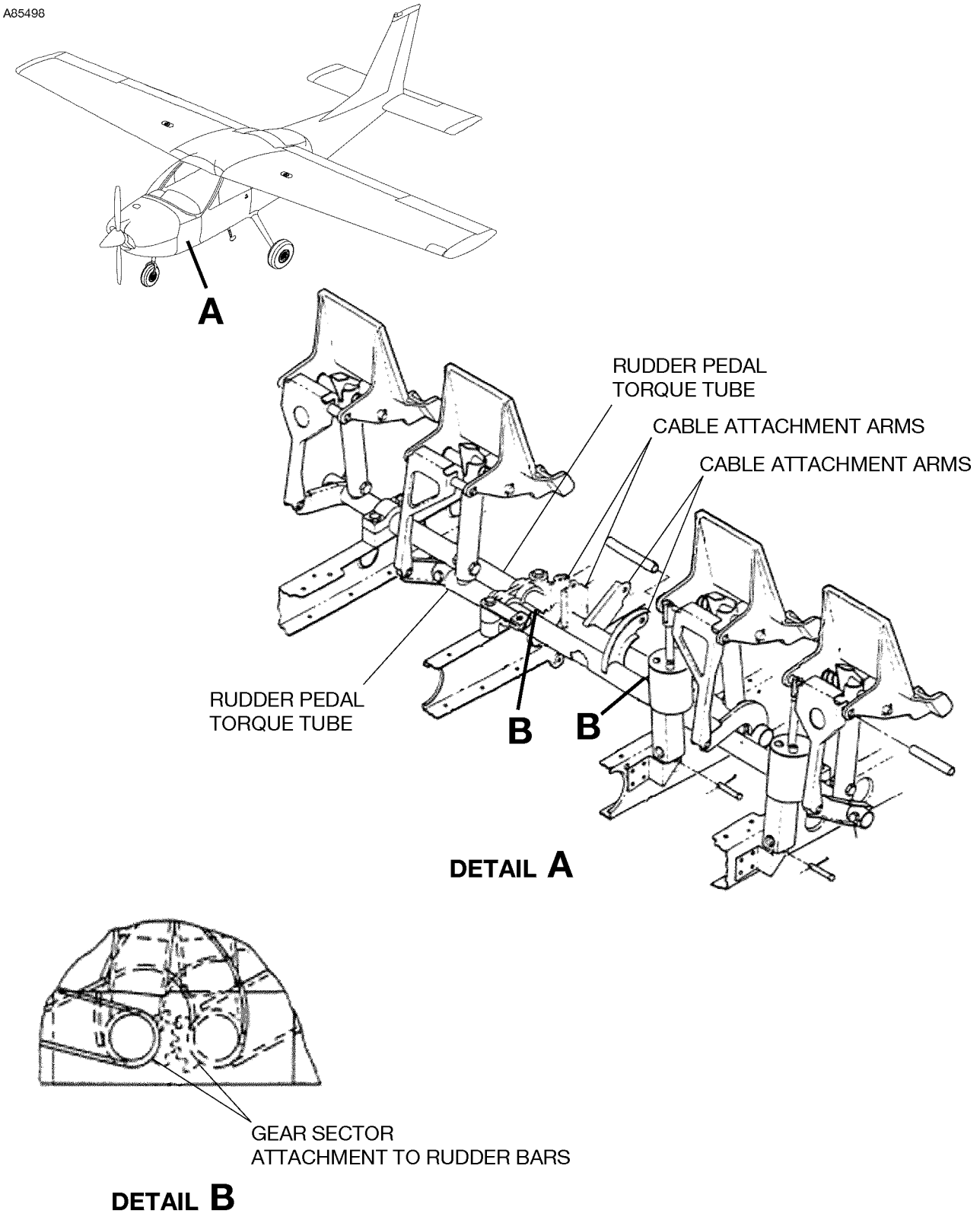
ACCESS/LOCATION	DETECTABLE CRACK SIZE
Fuselage, near forward firewall	Not Allowed

6. INSPECTION PROCEDURE
Visual

7. REPAIR/MODIFICATION
Typical failures occur at or close to welds in the rudder bar. Since the rudder bar is not heat treated after welding, it can be rewelded and used without subsequent heat treatment. Examine the rewelded area after welding for any new or additional cracking. Make other repairs by replacing damaged or missing parts with spare parts. Make repairs in accordance with Section 17 of the Model 177RG Service Manual. Coordinate any repair not available in Section 17 with Cessna Customer Service prior to beginning the repair.

8. COMMENTS

© Cessna Aircraft Company



RUDDER PEDAL TORQUE TUBE INSPECTION
Figure 1 (Sheet 1)

© Cessna Aircraft Company

SUPPLEMENTAL INSPECTION NUMBER: 27-30-02

1. TITLE:

Stabilator Trim Pulley Brackets and Actuator Bracket Structure Inspection

2. EFFECTIVITY

177RG0788 thru 177RG1366, F177RG0139 thru F177RG0177

		INSPECTION COMPLIANCE
ALL USAGE:	**INITIAL**	1000 Hours **(NOTE)**
	REPEAT	1000 Hours **(NOTE)**

NOTE: Coordinate this inspection with the trim tab actuator overhaul.

3. PURPOSE

To verify the integrity of the stabilator trim pulley brackets and the actuator support brackets.

4. INSPECTION INSTRUCTIONS

A. Remove trim tab door to get access to the actuator support hardware. Refer to the Model 177RG Service Manual.

B. Inspect stabilator trim pulley brackets and actuator support brackets for cracks, corrosion and bent flanges. Refer to Figure 1.
(1) Clean area before inspecting if grime or debris are present.

C. Inspect all pulleys for wear, flat spots and freedom of rotation.

D. Inspect all fasteners and attaching structure for integrity.

5. ACCESS AND DETECTABLE CRACK SIZE

ACCESS/LOCATION	DETECTABLE CRACK SIZE
Aft fuselage	Not Allowed

6. INSPECTION METHOD

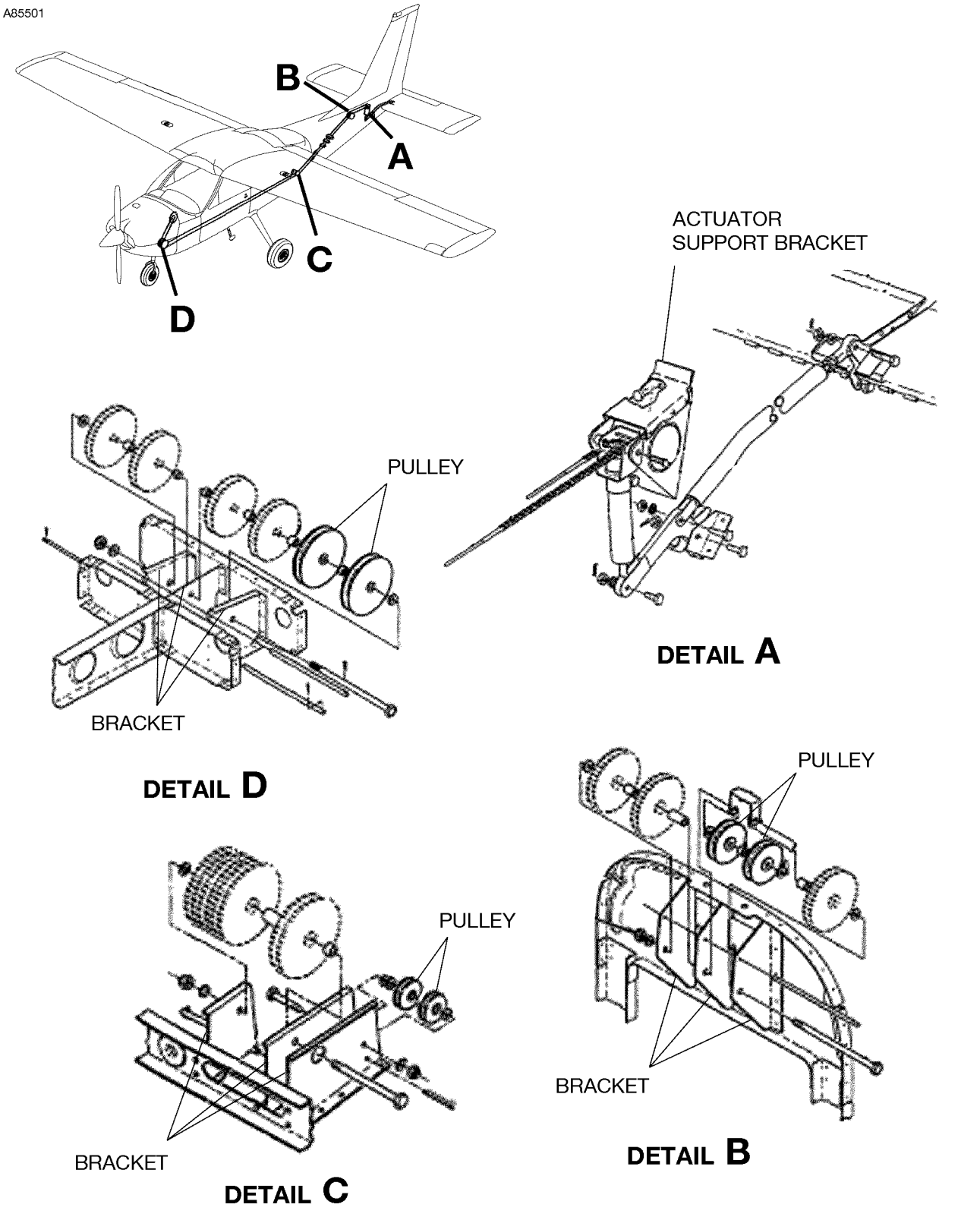
Visual

7. REPAIR/MODIFICATION

Replace any cracked or excessively corroded (10% or more of the material thickness is missing in the corroded section) brackets. Replace excessively worn, flat spotted or stiff pulleys. Straighten bent pulley brackets and actuator brackets with finger pressure, and recheck for cracking. Replace any loose or sheared fasteners. Make repairs in accordance with Section 17 of the Model 177RG Service Manual. Coordinate any repair not available in Section 17 with Cessna Customer Service prior to beginning the repair.

8. COMMENTS

© Cessna Aircraft Company



STABILATOR TRIM PULLEY BRACKETS AND ACTUATOR BRACKET STRUCTURE INSPECTION
Figure 1 (Sheet 1)

© Cessna Aircraft Company

SUPPLEMENTAL INSPECTION NUMBER: 32-10-01

1. TITLE:
Main Landing Gear Retraction System Inspection

2. EFFECTIVITY
177RG0788 thru 177RG1366, F177RG0139 thru F177RG0177

		INSPECTION COMPLIANCE		
ALL USAGE:	**INITIAL**	6000 hours	or	10 Years **(NOTE)**
	REPEAT	1000 hours	or	3 Years **(NOTE)**

NOTE: Refer to Note 1, Section 2A-14-00

3. PURPOSE
To ensure integrity of main landing gear retraction system.

4. INSPECTION INSTRUCTIONS

A. Check airplane records to verify that SE79-37 has been incorporated. If not, complete SE79-37 with this inspection.

B. Remove seats and carpeting as required to gain access to the plate above the actuator. Refer to the Model 177RG Service Manual.

C. Clean areas before inspecting if grime or debris are present.

D. Inspect the actuator, the actuator support assembly, and the rod end bearings for cracks and corrosion. Refer to Figure 1.

E. Inspect the actuator pins, gears, and sector arm for cracks and wear.

F. Inspect the main landing gear pivot fittings for cracks and corrosion.

G. Inspect the downlock support assembly for cracks or corrosion.

H. Install parts removed for access. Refer to the Model 177RG Service Manual.

5. ACCESS AND DETECTABLE CRACK SIZE

ACCESS/LOCATION/ZONE	DETECTABLE CRACK SIZE
Main Gear Section	Not Allowed

6. INSPECTION METHOD
Visual

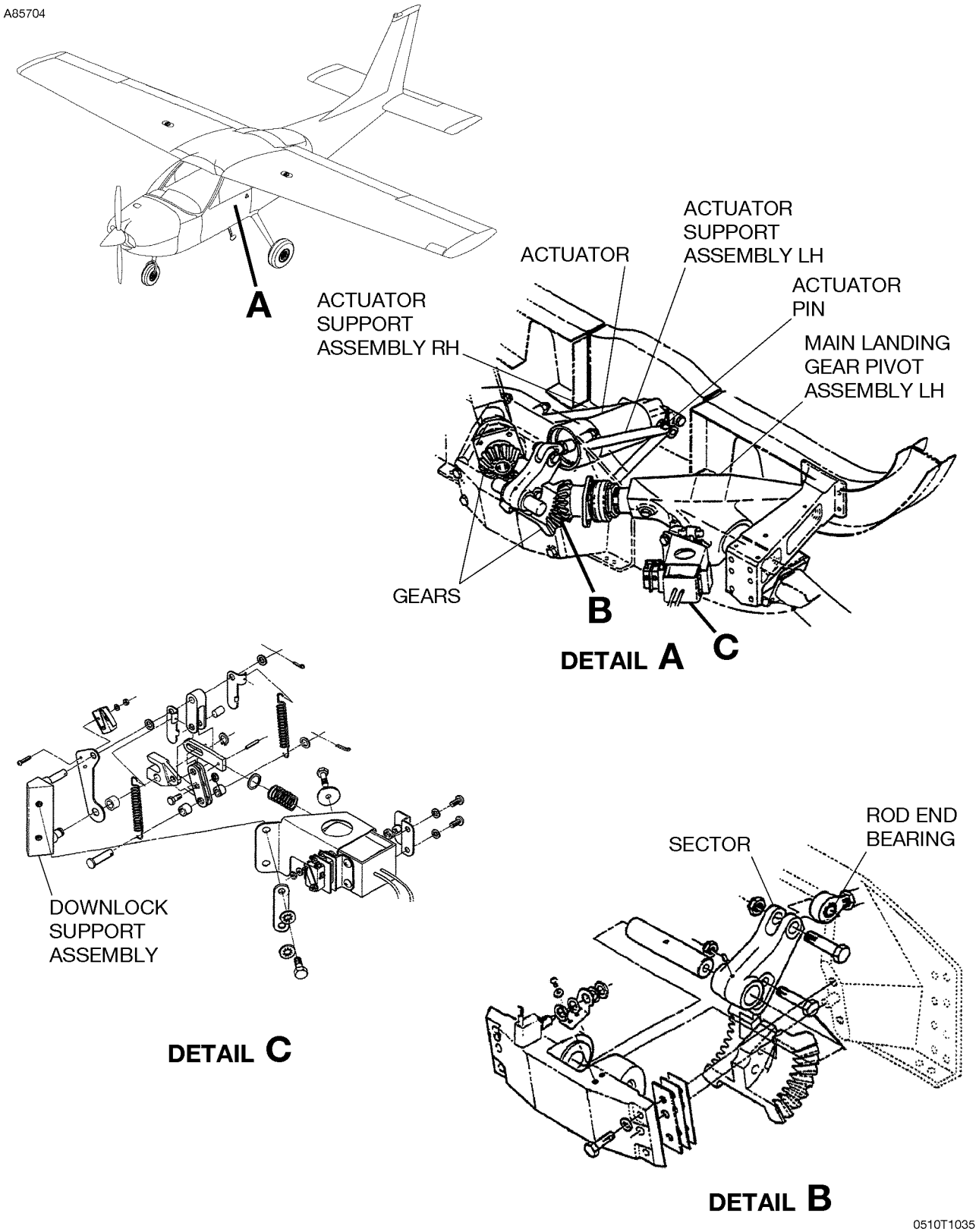
7. REPAIR/MODIFICATION

A. If rod end is cracked, replace in accordance with SE79-37 Rev. 1.

B. Replace damaged parts.

8. COMMENTS

© Cessna Aircraft Company



MAIN LANDING GEAR RETRACTION SYSTEM INSPECTION
Figure 1 (Sheet 1)

© Cessna Aircraft Company

SUPPLEMENTAL INSPECTION NUMBER: 32-13-01

1. TITLE:
Landing Gear Spring Corrosion Inspection

2. EFFECTIVITY
177RG0788 thru 177RG1366, F177RG0139 thru F177RG0177

CORROSION SEVERITY	INSPECTION COMPLIANCE	
MILD/MODERATE:	**INITIAL**	20 Years **(NOTE)**
	REPEAT	10 Years **(NOTE)**
SEVERE:	**INITIAL**	10 Years **(NOTE)**
	REPEAT	5 Years **(NOTE)**

NOTE: Refer to Section 2A-30-01 and associated maps to determine corrosion severity.

3. PURPOSE
To ensure corrosion protection of main landing gear springs.

4. INSPECTION INSTRUCTIONS

NOTE: The main landing gear springs are made from high strength steel that is shot peened inside and out on the full circumference and full length to increase the fatigue life of the part. If the protective layer of paint is chipped or worn away, corrosion (rust) is likely to occur.

A. Remove landing gear fairing. Refer to the Model 177RG Service Manual.

B. Inspect the spring for worn or chipped paint. Refer to Figure 1. If rust has developed, rework the gear in accordance with the Repair/Modification Section.
(1) Clean area before inspecting if grime or debris are present.

C. If the finish is worn or chipped, refinish the landing gear springs.

D. Install landing gear fairing. Refer to the Model 177RG Service Manual.

5. ACCESS AND DETECTABLE CRACK SIZE

ACCESS/LOCATION/ZONE	DETECTABLE CRACK SIZE
Main Gear Section	Not Allowed

6. INSPECTION METHOD
Visual

7. REPAIR/MODIFICATION

A. If rust has developed on the landing gear spring, it must be removed before refinishing. The recommended procedure to remove rust is by hand sanding, using a fine grained sandpaper.

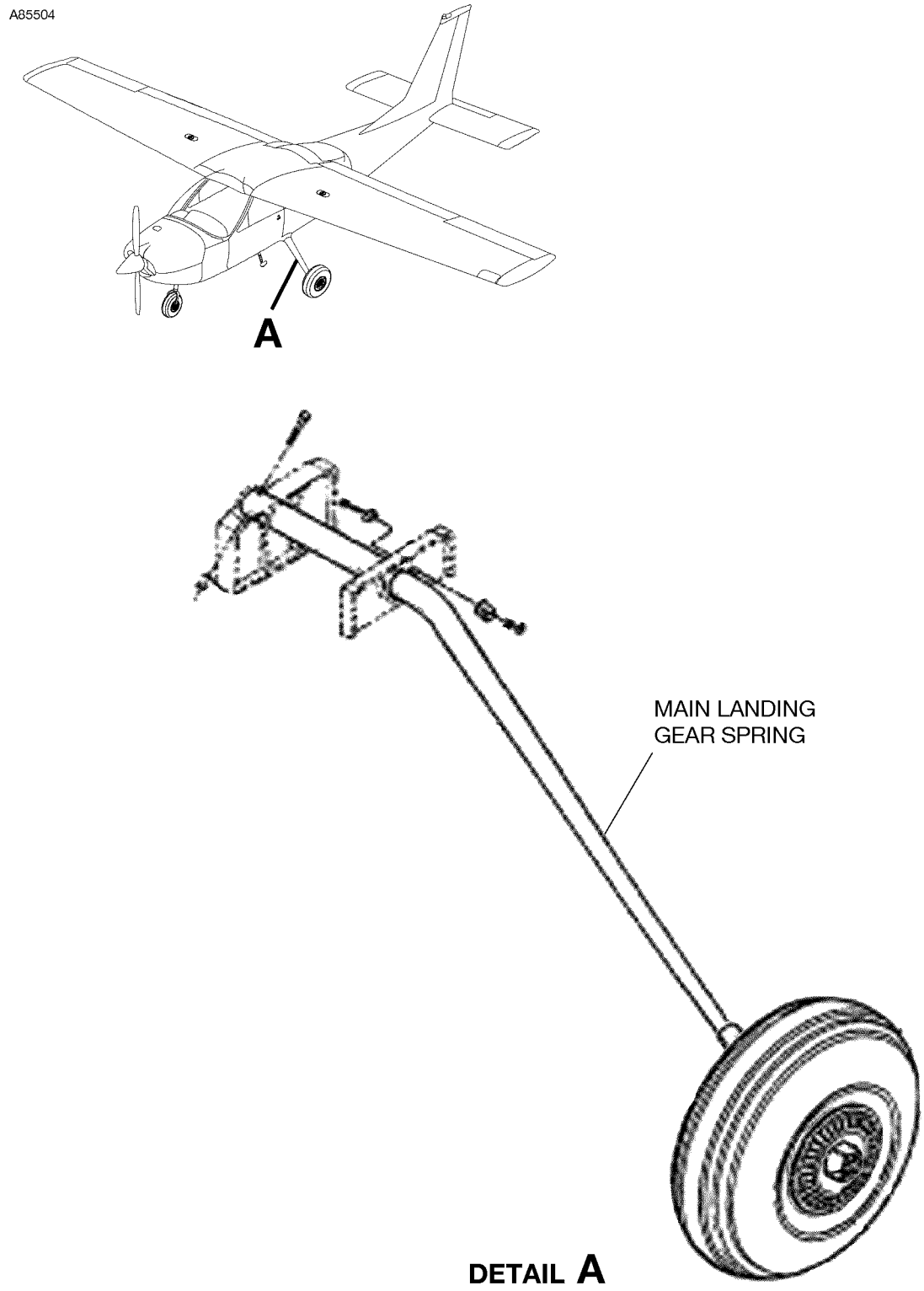
B. Use 180 or finer grit abrasive paper to produce a diameter-to-depth ratio of about 10:1. To determine the depth, use a straight edge and feeler gages. If the corrosion pit is deeper than 0.008 inches, the spring must be shot peened again using 330 steel shot to an almen intensity of 0.007 C to 0.010 C. If the depth of the corrosion pit is greater than 0.015, contact Cessna Customer Service for repair/ replacement instructions.

© Cessna Aircraft Company

C. Refinish sanded areas.
   (1) Solvent Wipe.
      (a) Wipe off excess oil, grease or dirt from the surface to be cleaned.
      (b) Apply solvent to a clean cloth, preferably by pouring solvent onto cloth from a safety can or other approved, labeled container. The cloth must be well saturated, but not dripping.
      (c) Wipe surface with the moistened cloth as necessary to dissolve or loosen soil. Work a small enough area so the surface being cleaned remains wet.
      (d) Immediately wipe the surface with a clean, dry cloth, while the solvent is still wet. Do not allow the surface to evaporate dry.
      (e) Do steps (b) through (d) again until there is no discoloration on the drying cloth.
   (2) Apply corrosion primer in accordance with Corrosion-Resistant Primer MIL-PRF-23377G or later.
      (a) Mix and apply in accordance with manufacturer's instructions.
      (b) Apply mixture with a wet cross coat to yield a dry film thickness of 0.6 to 0.8 mils.
      (c) Allow to air dry for two to four hours.
      (d) Apply topcoat within 24 hours.
   (3) Apply Polyurethane Enamel Topcoat.
      (a) Mix and apply in accordance with manufacturer's instructions.
      (b) Apply mixture with a wet cross coat to produce a dry film thickness of 1.5-2.0 mils.
      (c) Allow to air dry per the manufacturer's instruction.

8. COMMENTS

© Cessna Aircraft Company



LANDING GEAR SPRING CORROSION INSPECTION
Figure 1 (Sheet 1)

© Cessna Aircraft Company

SUPPLEMENTAL INSPECTION NUMBER: 32-13-02

1. TITLE:
Main Landing Gear Axle Inspection

2. EFFECTIVITY
177RG0788 thru 177RG1366, F177RG0139 thru F177RG0177

		INSPECTION COMPLIANCE		
ALL USAGE:	**INITIAL**	6000 hours	or	10 Years **(NOTE)**
	REPEAT	1000 hours	or	3 Years **(NOTE)**

NOTE: Refer to Note 1, Section 2A-14-00

3. PURPOSE
To ensure integrity of main landing gear axles.

4. INSPECTION INSTRUCTIONS

A. Jack the airplane in accordance with the Model 177RG Service Manual.

B. Remove the wheel. Refer to the Model 177RG Service Manual.

C. Inspect the axle for cracks and corrosion. Refer to Figure 1.
(1) Clean area before inspecting if grime or debris are present.
(2) Confirm suspected cracks with eddy current. Refer to Section 2A-13-01 Nondestructive Inspection Methods and Requirements, (Eddy Current Inspection-Surface Inspection), for additional instructions.

D. Install the wheel and remove the airplane from jacks. Refer to the Model 177RG Service Manual.

5. ACCESS AND DETECTABLE CRACK SIZE

ACCESS/LOCATION/ZONE	DETECTABLE CRACK SIZE
Main Gear Section	Not Allowed

6. INSPECTION METHOD
Visual with eddy current if required for confirmation.

7. REPAIR/MODIFICATION

A. If corrosion has developed on the landing gear axle, it must be removed before refinishing.

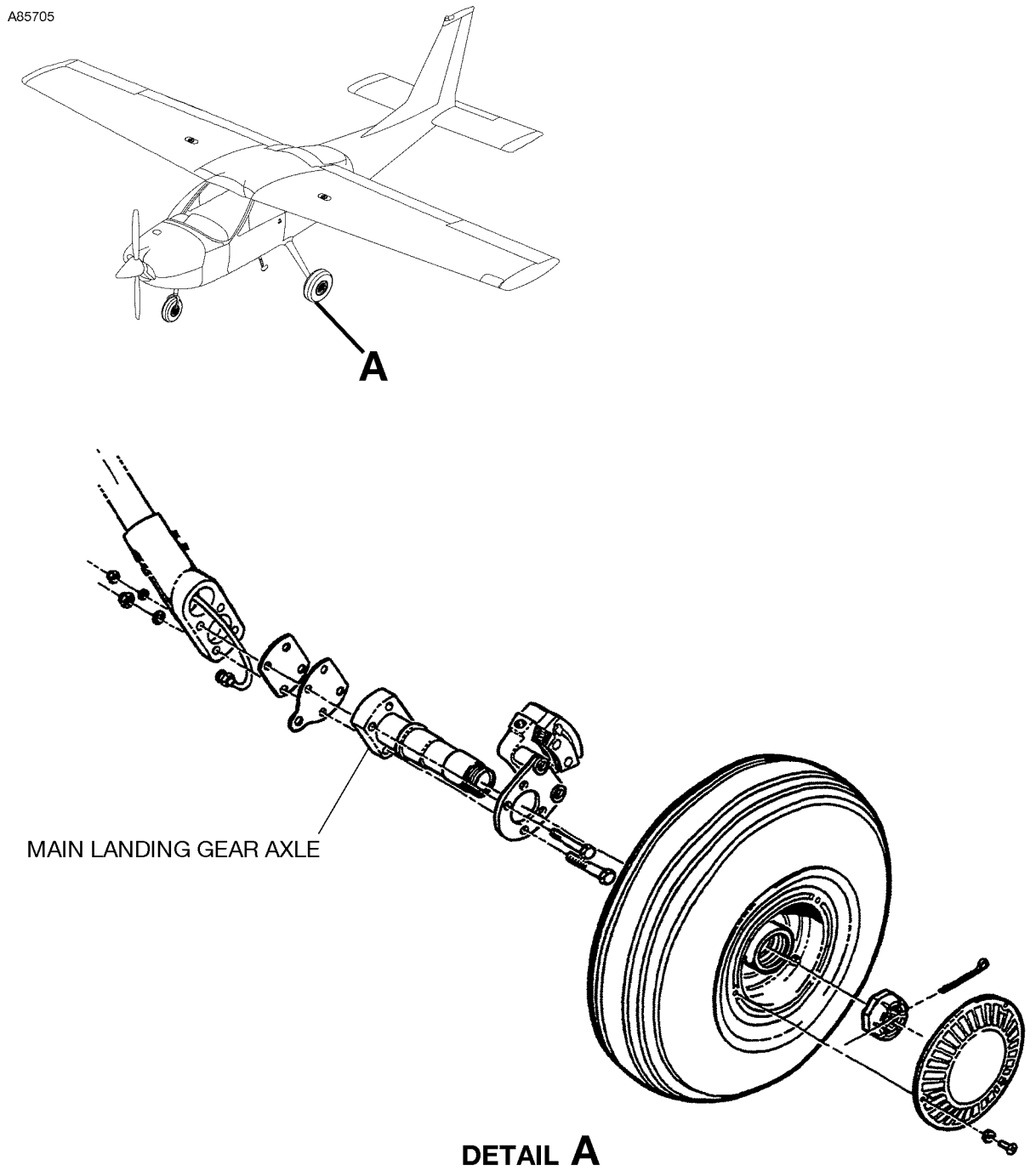
B. Use 180 or finer grit abrasive cloth to produce a diameter-to-depth ratio of about 10:1. To determine the depth, use a straight edge and feeler gages. If the corrosion pit is deeper than 0.005 inches, contact Cessna Customer Service for repair/replacement instructions.

C. Clean and apply corrosion protection.

D. Replace cracked axles.

8. COMMENTS

© Cessna Aircraft Company



MAIN LANDING GEAR AXLE INSPECTION
Figure 1 (Sheet 1)

© Cessna Aircraft Company

SUPPLEMENTAL INSPECTION NUMBER: 32-20-01

1. TITLE:
Nose Gear Torque Link and Fork Inspection

2. EFFECTIVITY
177RG0788 thru 177RG1366, F177RG0139 thru F177RG0177

		INSPECTION COMPLIANCE		
ALL USAGE:	**INITIAL**	3000 Hours	or	5 Years **(NOTE)**
	REPEAT	3000 Hours	or	5 Years **(NOTE)**

NOTE: Refer to Note 1, Section 2A-14-00.

3. PURPOSE
To ensure structural integrity of the nose gear torque link and nose gear fork.

4. INSPECTION INSTRUCTIONS

A. Deflate the strut. Refer to the Model 177RG Service Manual.

B. Remove torque link bolts one at a time in accordance with the Model 177RG Service Manual.

C. Inspect for bent bolts or worn bolts. Refer to Figure 1. Install serviceable bolts after inspection.
(1) Clean area before inspecting if grime or debris are present.

D. Inspect torque link bushings for excessive wear or deformation. Maximum new clearance between the NAS bushings in the torque link (ID=0.250) and the bolt (OD=0.2492/2483) is 0.0008 to 0.0017 in. Use 0.004 clearance as a wear limit.
(1) Clean area before inspecting if grime or debris are present.

E. Inspect the torque links for cracks.

F. Inspect the fork for cracking along the forging parting line.
(1) Clean area before inspecting if grime or debris are present.

5. ACCESS AND DETECTABLE CRACK SIZE

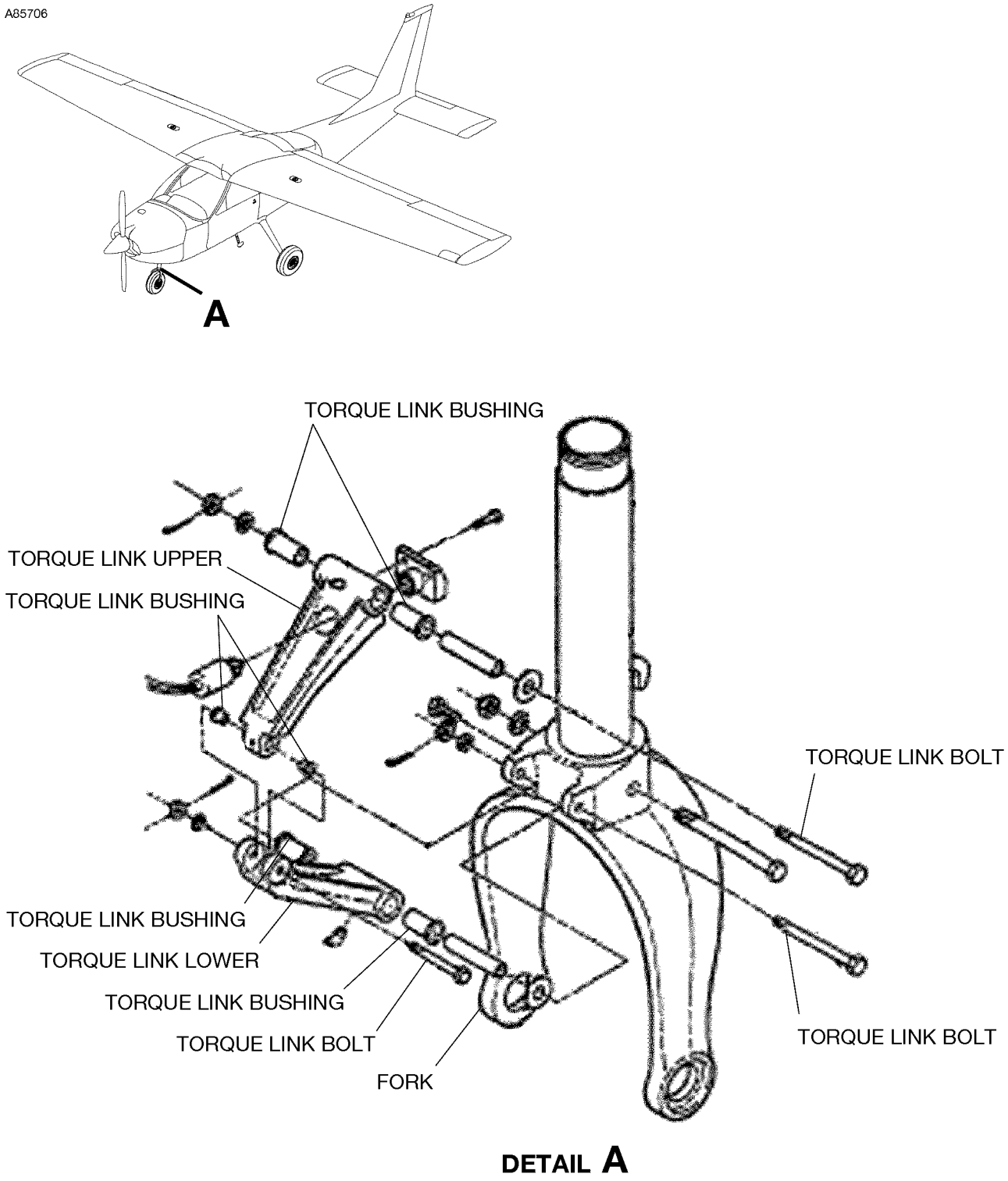
ACCESS/LOCATION	DETECTABLE CRACK SIZE
Nose Gear Section	Not Allowed

6. INSPECTION METHOD
Visual

7. REPAIR/MODIFICATION
Replace worn or bent bolts or worn bushings with new parts. A cracked fork or torque link is not repairable, and must be replaced. Make other repairs in accordance with Section 17 of the Model 177RG Service Manual. Coordinate any repair not available in Section 17 with Cessna Customer Service prior to beginning the repair.

8. COMMENTS

© Cessna Aircraft Company



NOSE GEAR TORQUE LINK AND FORK INSPECTION
Figure 1 (Sheet 1)

© Cessna Aircraft Company

SUPPLEMENTAL INSPECTION NUMBER: 53-11-01

1. TITLE:
Carry-Thru Spar Corrosion Inspection

2. EFFECTIVITY
177RG0788 thru 177RG1366, F177RG0139 thru F177RG0177

CORROSION SEVERITY	INSPECTION COMPLIANCE	
MILD/MODERATE:	**INITIAL**	20 Years **(NOTE)**
	REPEAT	10 Years **(NOTE)**
SEVERE:	**INITIAL**	10 Years **(NOTE)**
	REPEAT	3 Years **(NOTE)**

NOTE: Refer to Section 2A-30-01 and associated maps to determine corrosion severity.

3. PURPOSE
To ensure structural integrity of the carry-thru spar structure.

4. INSPECTION INSTRUCTIONS

A. Obtain access to the upper portion of the carry-thru spar. Refer to the Model 177RG Service Manual.

B. Examine the upper portions of the doorposts for damage. Refer to Figure 1.

C. Inspect for corrosion on the carry-thru spar. Pay particular attention to locations where support wires in the air ducts contact the spar.
(1) Clean area before inspecting if grime or debris are present.

D. Inspect for corrosion at the wing attachment lugs.
(1) Clean area before inspecting if grime or debris are present.

5. ACCESS AND DETECTABLE CRACK SIZE

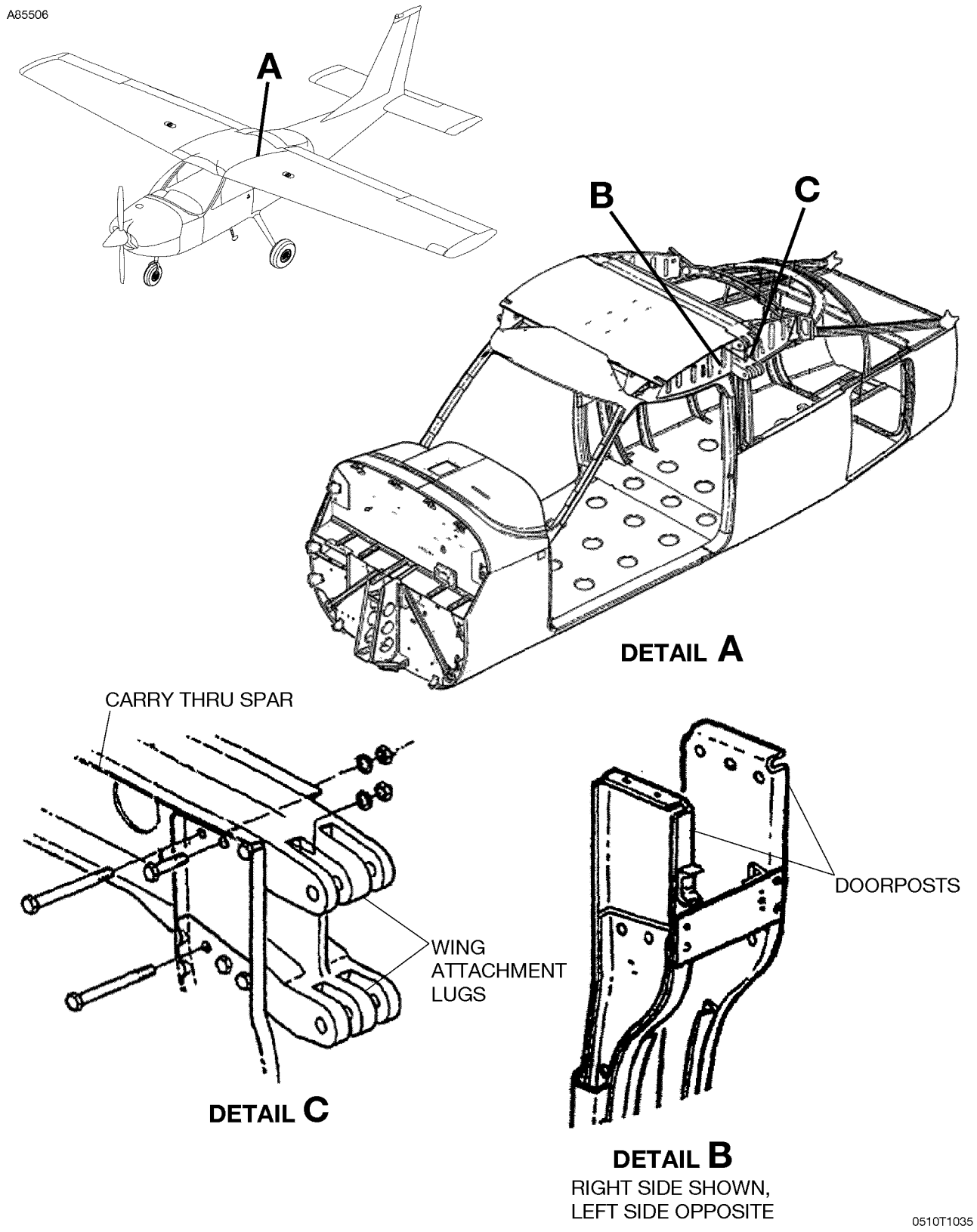
ACCESS/LOCATION	DETECTABLE CRACK SIZE
Cabin Interior Section	Not Allowed

6. INSPECTION METHOD
Visual

7. REPAIR/MODIFICATION
Replace or repair damaged spar. For repair, photograph corrosion and contact Cessna Customer Service for evaluation of corrosion damage.

8. COMMENTS

© Cessna Aircraft Company



CARRY-THRU SPAR CORROSION INSPECTION
Figure 1 (Sheet 1)

© Cessna Aircraft Company

SUPPLEMENTAL INSPECTION NUMBER: 53-11-02

1. TITLE:
Carry-Thru Spar Inspection

2. EFFECTIVITY
177RG0788 thru 177RG1366, F177RG0139 thru F177RG0177

INSPECTION COMPLIANCE

TYPICAL:	**INITIAL**	12,000 Hours	or	20 Years **(NOTE)**
	REPEAT	1000 Hours	or	3 Years **(NOTE)**
SEVERE:	**INITIAL**	6000 Hours	or	3 Years **(NOTE)**
	REPEAT	500 Hours	or	1 Year **(NOTE)**

NOTE: Refer to Note 1, Section 2A-14-00.

3. PURPOSE
To ensure structural integrity of the carry-thru spar structure.

4. INSPECTION INSTRUCTIONS

A. Obtain access to the carry-thru to wing attachment lugs. Refer to the Model 177RG Service Manual.

B. Examine the root ribs and their attachments to the carry-thru spar for damage. Refer to Figure 1.
(1) Clean area before inspecting if grime or debris are present.

C. Inspect the wing attachment lugs on both the carry thru and the wing for cracks.
(1) Clean area before inspecting if grime or debris are present.

D. Inspect the lower attachment lugs in the vicinity of the root rib for cracking. Confirm any suspected cracks with surface eddy current.

5. ACCESS AND DETECTABLE CRACK SIZE

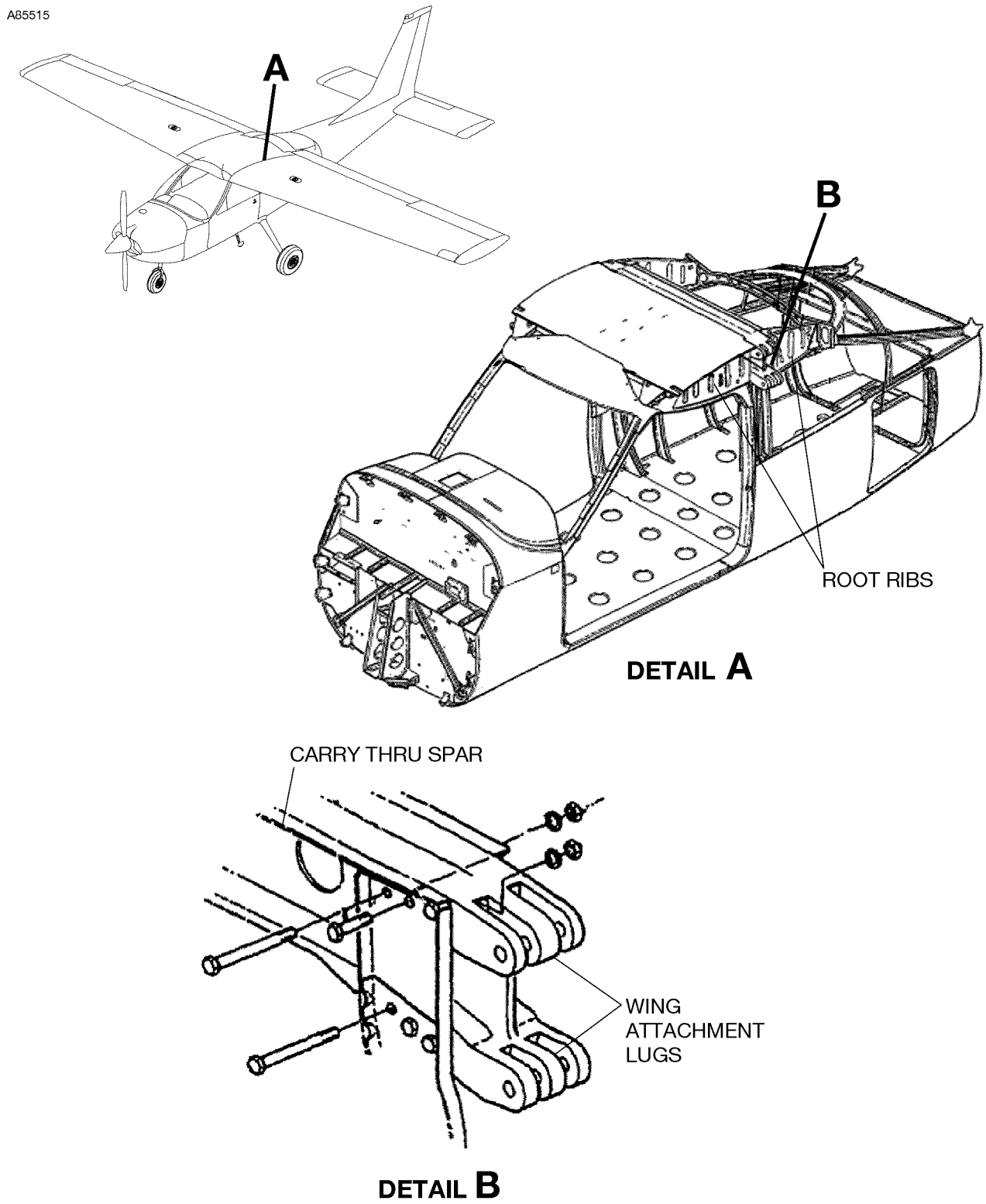
ACCESS/LOCATION	DETECTABLE CRACK SIZE
Rear Spar Lugs	Not Allowed

6. INSPECTION METHOD
Visual, and surface eddy current to confirm any lug cracking.

7. REPAIR/MODIFICATION
Replace or repair damaged root rib, carry-thru spar, or wing attach fittings. Contact Cessna Customer Service for evaluation of damage.

8. COMMENTS

© Cessna Aircraft Company



CARRY-THRU SPAR INSPECTION
Figure 1 (Sheet 1)

© Cessna Aircraft Company

SUPPLEMENTAL INSPECTION NUMBER: 53-30-01

1. TITLE

Cabin Interior Skin Panels Corrosion Inspection

2. EFFECTIVITY

177RG0788 thru 177RG1366, F177RG0139 thru F177RG0177

CORROSION SEVERITY	INSPECTION COMPLIANCE	
MILD/MODERATE:	**INITIAL**	20 Years **(NOTE)**
	REPEAT	5 Years **(NOTE)**
SEVERE:	**INITIAL**	10 Years **(NOTE)**
	REPEAT	3 Years **(NOTE)**

NOTE: Refer to Section 2A-30-01 and associated maps to determine corrosion severity.

3. PURPOSE

To verify the integrity of the cabin skins, stringers, and frames under and around sound deadening material.

4. INSPECTION INSTRUCTIONS

A. Remove interior of airplane to gain access to inside skins, stringers, and frames. Remove sound dampening material. Refer to the Model 177RG Service Manual.

B. Visually inspect skin panels for corrosion. Particular attention should be given to inspection of panels below windows, belly, and other areas where moisture could enter or accumulate.
(1) Clean area before inspecting if grime or debris are present.

C. Inspect interior of door skins and structure for corrosion.

D. Inspect frames and stringers.

E. Inspect cabin windows for integrity of bond to preclude entry of water into cabin.

5. ACCESS AND DETECTABLE CRACK SIZE

ACCESS/LOCATION	DETECTABLE CRACK SIZE
Cabin Interior	Not Applicable

6. INSPECTION METHOD

Visual, ultrasonic thickness test.

7. REPAIR/MODIFICATION

A. If corrosion is found, remove corrosion by lightly sanding corroded area, taking care to remove as little material as necessary to completely remove corrosion and remaining pits in skin.

B. Buff out sanding marks.

C. Assess remaining skin, stringer, or frame thickness to determine the maximum material removed. An ultrasonic thickness test can be used for this.
(1) If more than 0.004 inch of skin material has been removed from the local area, the area must be repaired or replaced.
(2) If more than 10% of stringer or frame material has been removed from the local area, the area must be repaired or replaced.

© Cessna Aircraft Company

D. Clean and prime sanded areas.

E. Sound deadening material is for acoustic attenuation, and may be replaced or omitted at owner's option.

8. COMMENTS

© Cessna Aircraft Company

SUPPLEMENTAL INSPECTION NUMBER: 53-47-01

1. TITLE

Seat Rails and Seat Rail Structure Corrosion Inspection

2. EFFECTIVITY

177RG0788 thru 177RG1366, F177RG0139 thru F177RG0177

	INSPECTION COMPLIANCE	
ALL USAGE:	**INITIAL**	10 Years **(NOTE)**
	REPEAT	5 Years **(NOTE)**

NOTE: Refer to Section 2A-30-01 and associated maps to determine corrosion severity.

3. PURPOSE

To verify the integrity of the seat rails.

4. INSPECTION INSTRUCTIONS

A. Verify accomplishment of AD 2011-10-09 for inspection of seat rails for cracks.

B. Remove seats and carpet or mat as necessary to gain access to inspect seat rails and seat rail base.

C. Visually inspect seat rails for corrosion. Refer to Figure 1.
   (1) If adhesive, grime or debris are present, clean area to inspect around base.

5. ACCESS AND DETECTABLE CRACK SIZE

ACCESS/LOCATION	DETECTABLE CRACK SIZE
Cabin Interior	N/A

6. INSPECTION METHOD

Visual

7. REPAIR/MODIFICATION

A. If corrosion is found, repair in accordance with the following.
   (1) Clean and lightly sand corroded area to remove surface damage and pits.
   (2) Buff out scratch marks.
   (3) Inspect area and assess amount of material removed.
      (a) If thickness of flange has been reduced by 10% or more, rail must be replaced.
      (b) A local flange reduction of 20% of thickness is acceptable where confined to one side of extrusion, provided that the reduced area does not coincide with both seat pin hole and fastener hole.
      (c) If thickness of web is reduced by 10% or more, rail must be replaced.
      (d) If local web reduction of 20% exceeds 1" in length, rail must be replaced.
      (e) if bulb is reduced in thickness at seat pin hole by 5% or more, rail must be replaced.
      (f) If bulb is reduced by more than 10% at areas between holes, rail must be replaced.
   (4) Brush coat sanded areas with alodine.

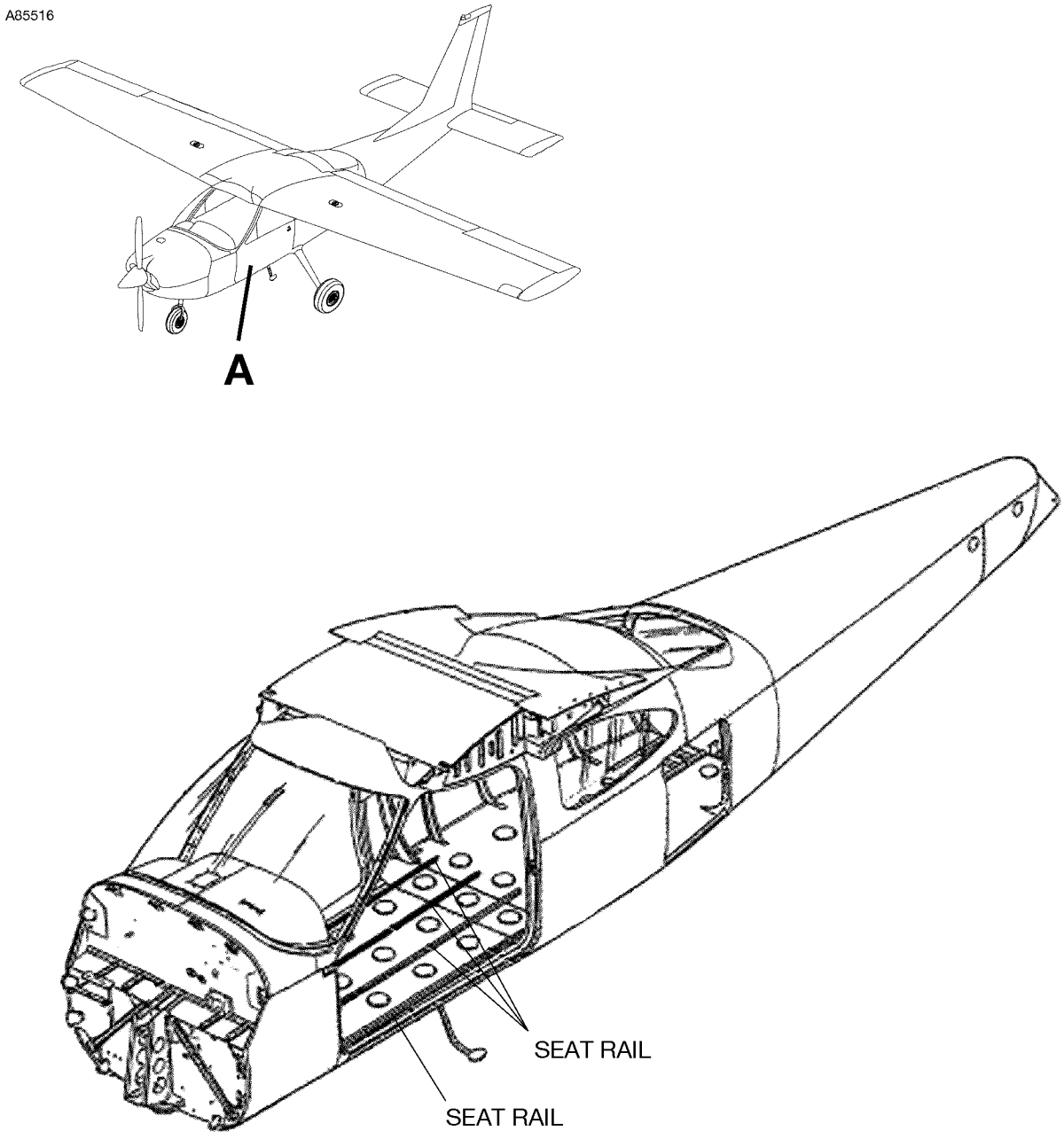
B. Install seat and check for proper operation. If removed material on bulb interferes with proper operation of seat, replace rail.

© Cessna Aircraft Company

8. COMMENTS

For extensive damage or conditions not addressed, contact Cessna Customer Service prior to beginning the repair.

© Cessna Aircraft Company



DETAIL A

0510T1035

SEAT RAILS AND SEAT RAIL STRUCTURE CORROSION INSPECTION
Figure 1 (Sheet 1)

© Cessna Aircraft Company

SUPPLEMENTAL INSPECTION NUMBER: 55-10-01

1. TITLE:
Stabilator and Attachments Inspection

2. EFFECTIVITY
177RG0788 thru 177RG1366, F177RG0139 thru F177RG0177

		INSPECTION COMPLIANCE			
TYPICAL:	**INITIAL**	10,000 Hours	or	20 Years	**(NOTE)**
	REPEAT	3000 Hours	or	5 Years	**(NOTE)**
SEVERE:	**INITIAL**	3000 Hours	or	5 Years	**(NOTE)**
	REPEAT	1000 Hours	or	3 Years	**(NOTE)**

NOTE: See Note 1, Section 2A-14-00.

3. PURPOSE
To inspect stabilator and attachments for signs of damage, cracking, or deterioration.

4. INSPECTION INSTRUCTIONS

A. Open all stabilator access panels. Refer to the Model 177RG Service Manual.

B. Visually inspect stabilator for condition, cracks and security; hinge bolts, hinge bearings for condition and security; bearings for freedom of rotation; attach fittings for evidence of damage, wear, failed fasteners and security. Refer to Figure 1.
(1) Clean area before inspecting if grime or debris are present.

C. Visually inspect the 1709019-3 and -4 stiffeners and attachments at the upper end of the stabilator attachment brackets for evidence of damage.

D. Using a borescope, inspect forward and aft stabilator spars, ribs, and attach fittings for cracks, corrosion, loose fasteners, elongated fastener attach holes and signs of fatigue and deterioration. Pay particular attention to the skins at the location where stringers pass through ribs. Apply finger pressure at the intersection to check for free play indicating a broken rib.

E. Install all previously removed access panels according to the Model 177RG Service Manual.

5. ACCESS AND DETECTABLE CRACK SIZE

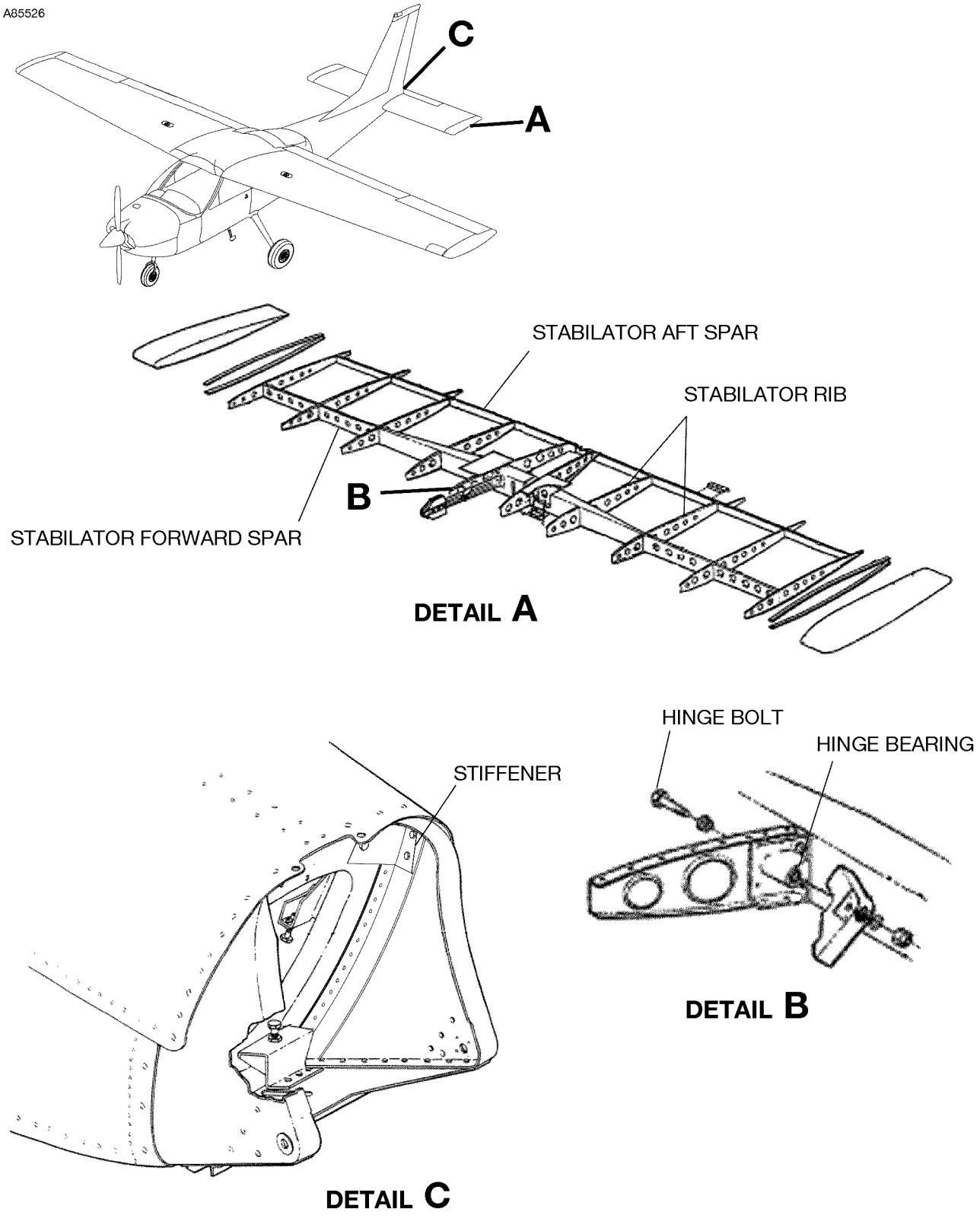
ACCESS/LOCATION	DETECTABLE CRACK SIZE
Stabilator	Not Allowed

6. INSPECTION METHOD
Visual

7. REPAIR/MODIFICATION
Replace damaged bolts and nuts. Replace damaged fittings and small parts. Replace damaged or loose rivets. Hinge bearings are prepacked with grease, which will eventually oxidize and harden after years of service. Several applications of penetrating oil will help free up a stiff bearing. Repairs may be made in accordance with Section 17 of the Model 177RG Service Manual. Any repair not available in Section 17 should be coordinated with Cessna Customer Service prior to beginning the repair.

8. COMMENTS

© Cessna Aircraft Company



STABILATOR AND ATTACHMENTS INSPECTION
Figure 1 (Sheet 1)

© Cessna Aircraft Company

SUPPLEMENTAL INSPECTION NUMBER: 55-20-02

1. TITLE:
Stabilator Balance Weight Arm Bracket Inspection

2. EFFECTIVITY
177RG0788 thru 177RG1366, F177RG0139 thru F177RG0177

		INSPECTION COMPLIANCE		
ALL USAGE:	**INITIAL**	2000 Hours	or	20 Years **(NOTE)**
	REPEAT	200 Hours	or	1 Year **(NOTE)**

NOTE: Refer to Note 1, Section 2A-14-00.

3. PURPOSE
To inspect the balance weight arms for the possibility of cracking.

4. INSPECTION INSTRUCTIONS

A. Check aircraft records to determine if the 1732010-3 and -4 brackets have been replaced by 1732063-1 and -2 brackets. If the brackets have been replaced, this inspection is complete.

B. Remove stabilator (1) from airplane per the Model 177RG Service Manual.

C. Remove balance arm (3) from stabilator by removing bolts, washers and nuts. Retain the balance arm, bolts and washers, discard nuts. Refer to Figure 1.

D. Visually inspect Right Hand and Left Hand (5) and (11) brackets for cracks. Pay particular attention to area around the radius under the bolt hole. If no cracks are visible, perform a surface eddy current inspection of the bracket for cracks. Refer to Section 2A-13-01 Nondestructive Inspection Methods and Requirements, (Eddy Current Inspection – Surface Inspection) for additional instructions.
(1) Clean area before inspecting if grime or debris are present.

E. Install balance arm (3) on stabilator using retained hardware and new nuts. Install stabilator and rig control cables in accordance with Sections 8 and 9 of the Model 177RG Service Manual.

F. Make an entry in the airplane logbook stating compliance with this SID and the method of compliance.

5. ACCESS AND DETECTABLE CRACK SIZE

ACCESS/LOCATION	DETECTABLE CRACK SIZE
Stabilator	Not Allowed

6. INSPECTION METHOD
Visual, Eddy Current

7. REPAIR/MODIFICATION

A. If cracks are detected, replace cracked parts as follows:

B. Refer to Figure 1, sheets 1 thru 4. Drill out existing rivets in location (7) and (12) on both Right Hand and Left Hand brackets (5) on the forward side of the spar. Remove and discard brackets.

C. Drill out existing rivets in location (11) on both right hand and left hand brackets (11) on the aft side of the spar. Remove and discard brackets.

D. Deburr and clean all holes.

© Cessna Aircraft Company

E. Place new right hand bracket (11) in position and match existing holes in bulkhead (8). Match holes (7), (9) and (12) thru bracket (11) and cleco bracket in place.

F. Place new right hand bracket (11) in position, install bolt (10) thru left hand bracket (11) and right hand bracket (11) for proper alignment. Using existing holes in bulkhead (8), match existing holes in bulkhead (8). Match holes (7) and (9) thru left hand bracket (11) and cleco bracket in place. Ream (12) holes to 0.1875 for Hi-Lock bolts.

G. Deburr and clean holes reamed in step F.

H. Secure brackets (11) using rivets (9) and Hi-Lock bolts and collars. Reverse *Hi*-Lock bolt head as shown in Figure 1 sheet 4, to clear control arm attach bolt head (10).

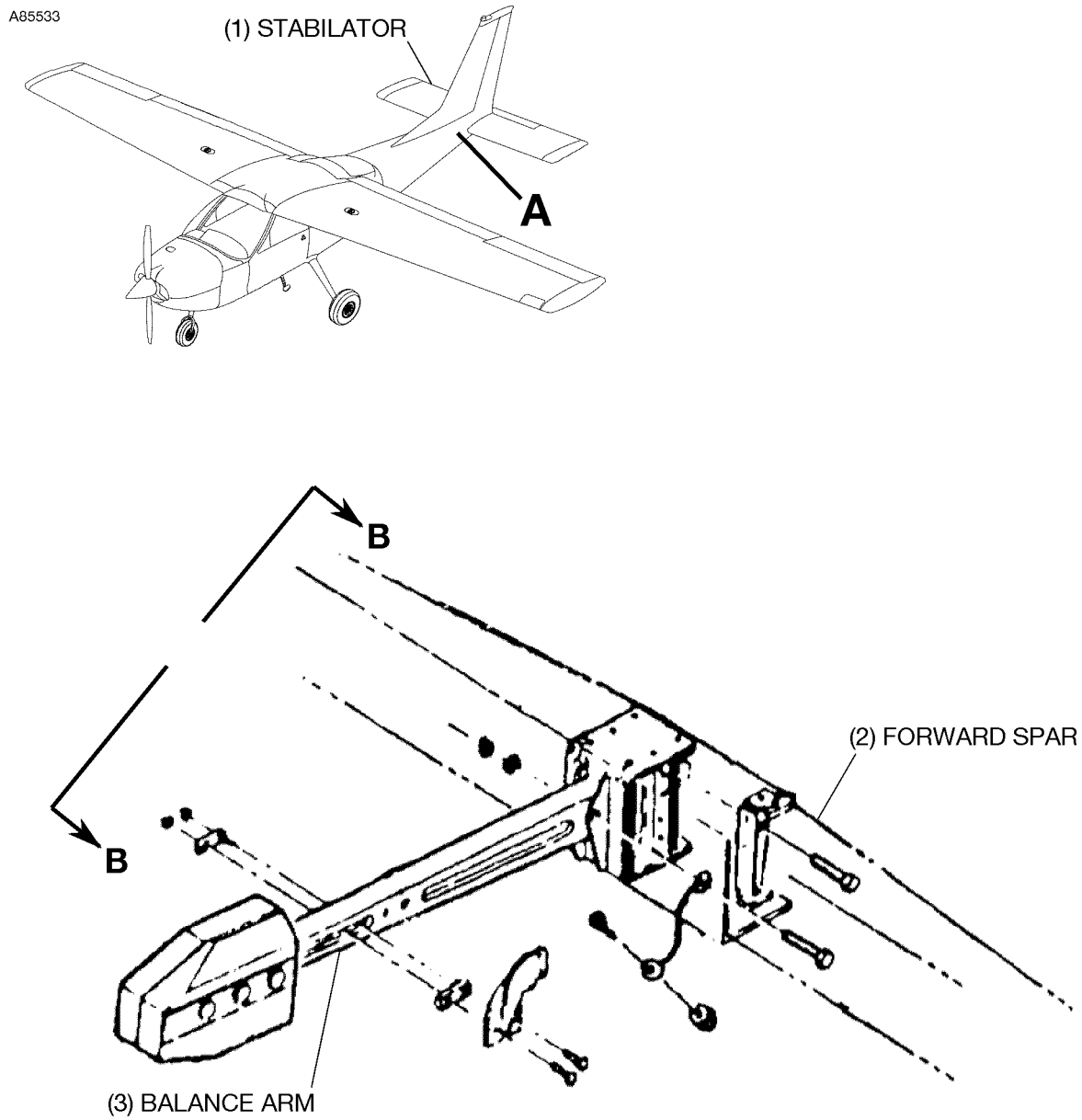
I. Repeat steps E through H for brackets (5) using Hi-Lock bolts (7) and reversing Hi-Lock fastener in the same location as the aft bracket (11) to clear forward control arm attach bolt head.

J. With brackets (5) and (11) secured in place, install balance arm (3) and secure with retained bolts and washers and new nuts (4) and (10). Refinish area as required.

8. COMMENTS

This inspection supersedes and replaces SEB89-1.

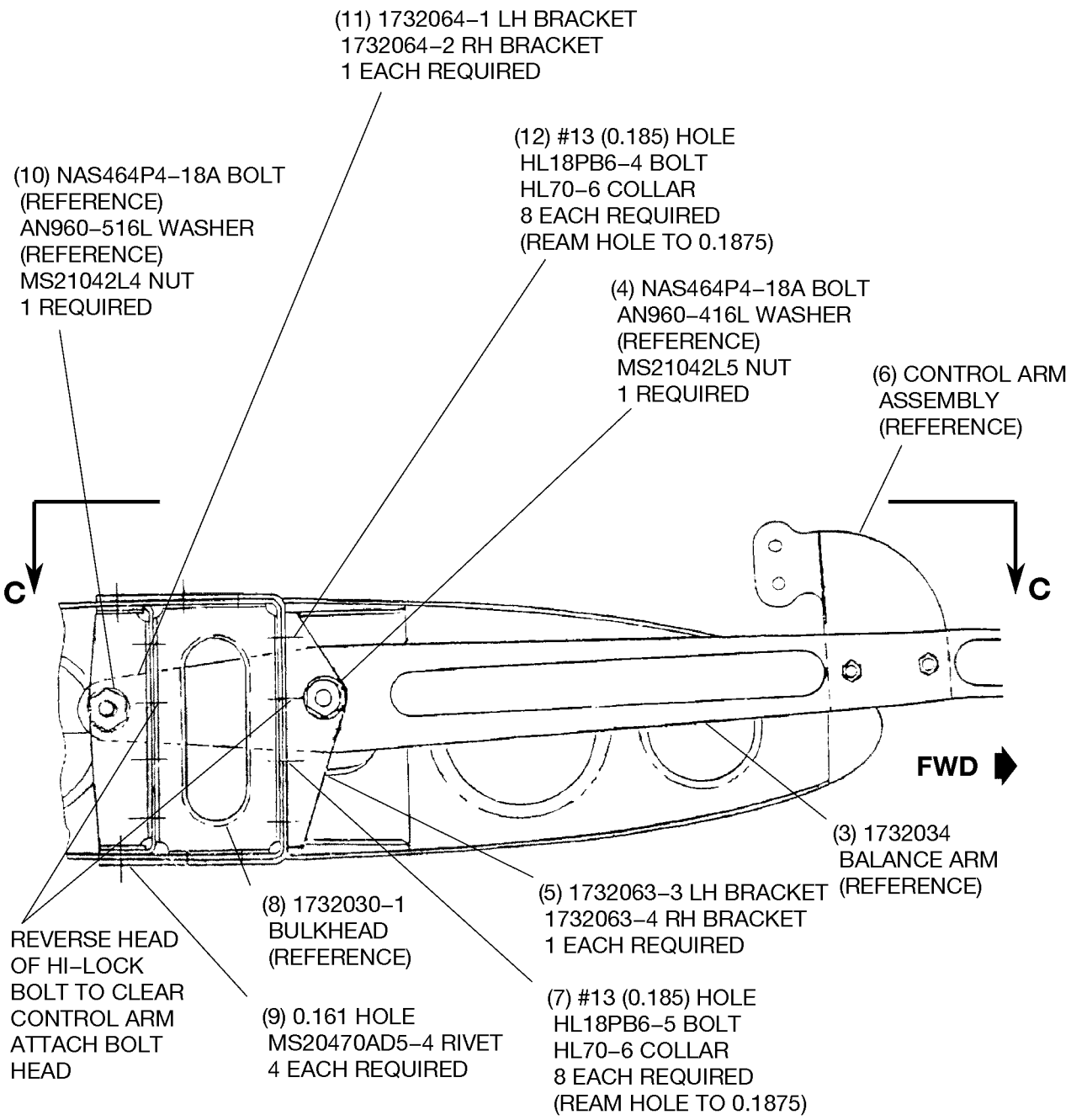
© Cessna Aircraft Company



STABILATOR BALANCE WEIGHT ARM BRACKET INSPECTION
Figure 1 (Sheet 1)

© Cessna Aircraft Company

A85534



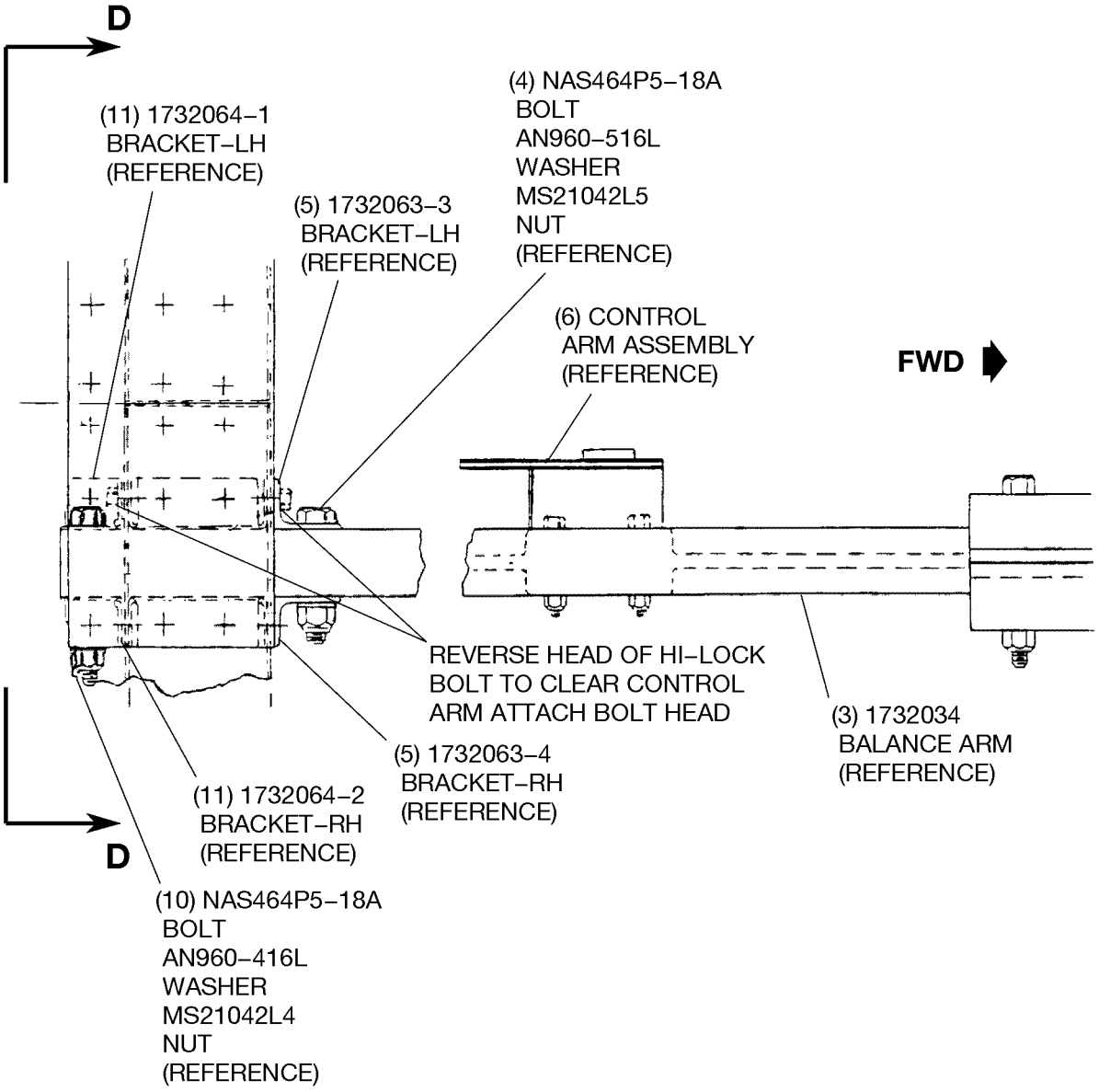
VIEW B–B
VIEW LOOKING INBOARD FROM RIGHT SIDE OF STABILATOR

0510T1035

STABILATOR BALANCE WEIGHT ARM BRACKET INSPECTION
Figure 1 (Sheet 2)

© Cessna Aircraft Company

A85535



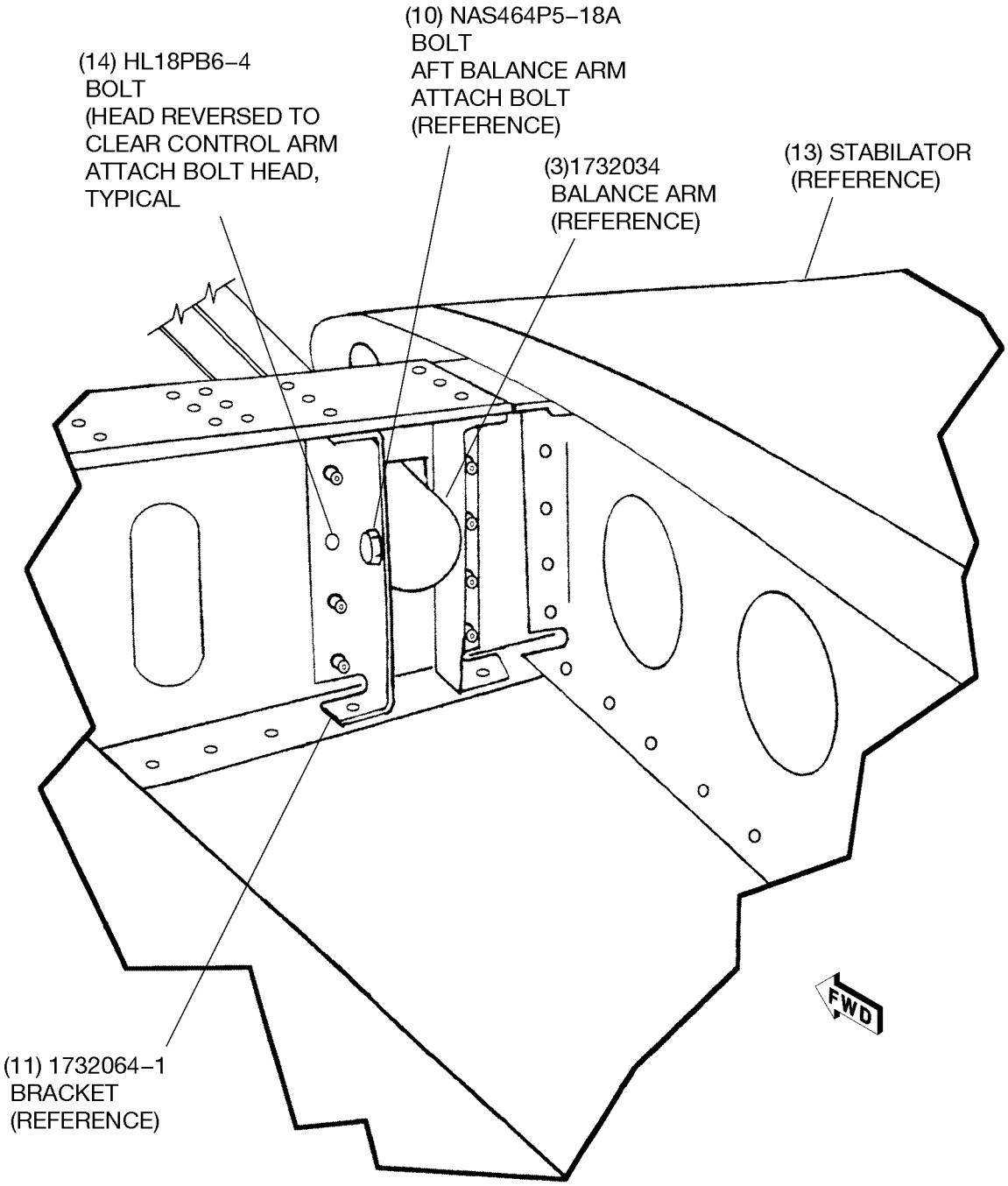
VIEW C–C
VIEW LOOKING DOWN ON BALANCE ARM ASSEMBLY

0510T1035

STABILATOR BALANCE WEIGHT ARM BRACKET INSPECTION
Figure 1 (Sheet 3)

© Cessna Aircraft Company

A85536



VIEW D–D
VIEW LOOKING INBOARD AND FORWARD
AT BALANCE ARM REAR ATTACH INSTALLATION

0510T1035

STABILATOR BALANCE WEIGHT ARM BRACKET INSPECTION
Figure 1 (Sheet 4)

© Cessna Aircraft Company

SUPPLEMENTAL INSPECTION NUMBER: 55-30-01

1. TITLE:
Vertical Stabilizer, Rudder and Attachments Inspection

2. EFFECTIVITY
177RG0788 thru 177RG1366, F177RG0139 thru F177RG0177

		INSPECTION COMPLIANCE		
ALL USAGE:	**INITIAL**	10,000 Hours	or	20 Years **(NOTE)**
	REPEAT	3000 Hours	or	5 Years **(NOTE)**

NOTE: Refer to Note 1, Section 2A-14-00.

3. PURPOSE
To inspect vertical stabilizer, rudder and attachments for signs of damage, cracking, or deterioration.

4. INSPECTION INSTRUCTIONS

A. Remove rudder from airplane and open all vertical stabilizer access panels. Refer to the Model 177RG Service Manual.

B. Visually inspect rudder hinges for condition, cracks and security; hinge bolts, hinge bearings for condition and security; bearings for freedom of rotation; attach fittings for evidence of damage, wear, failed fasteners and security. Refer to Figure 1.
(1) Clean area before inspecting if grime or debris are present.

C. Using a borescope, inspect forward and aft vertical stabilizer spars, ribs, and attach fittings for cracks, corrosion, loose fasteners, elongated fastener attach holes and signs of damage, cracking, or deterioration. Use of a borescope is recommended.
(1) Clean area before inspecting if grime or debris are present.

D. Inspect rudder for deterioration resulting from fatigue, wear, overload, wind damage, and corrosion.

E. Inspect skins, spars, ribs, for cracks, corrosion and working fasteners. Pay particular attention to the skins at the location where stringers pass through ribs. Apply finger pressure at the intersection to check for free play indicating a broken rib.

F. If corrosion or a frozen bearing is found in 4.B. above, replace the rudder hinge or conduct a surface eddy current inspection for cracks of each rudder hinge attach fitting. Refer to Section 2A-13-01 (Nondestructive Inspection Methods and Requirements), Eddy Current Inspection – Surface Inspection, for additional instructions. The inspection is for the aluminum structure outside of the bearing, so set the instrument for aluminum.

G. Install rudder and install all previously removed access panels according to the Model 177RG Service Manual.

5. ACCESS AND DETECTABLE CRACK SIZE

ACCESS/LOCATION	DETECTABLE CRACK SIZE
Vertical Stabilizer, Rudder and Stabilizer Attachment	Not Allowed

6. INSPECTION METHOD
Visual and Eddy Current

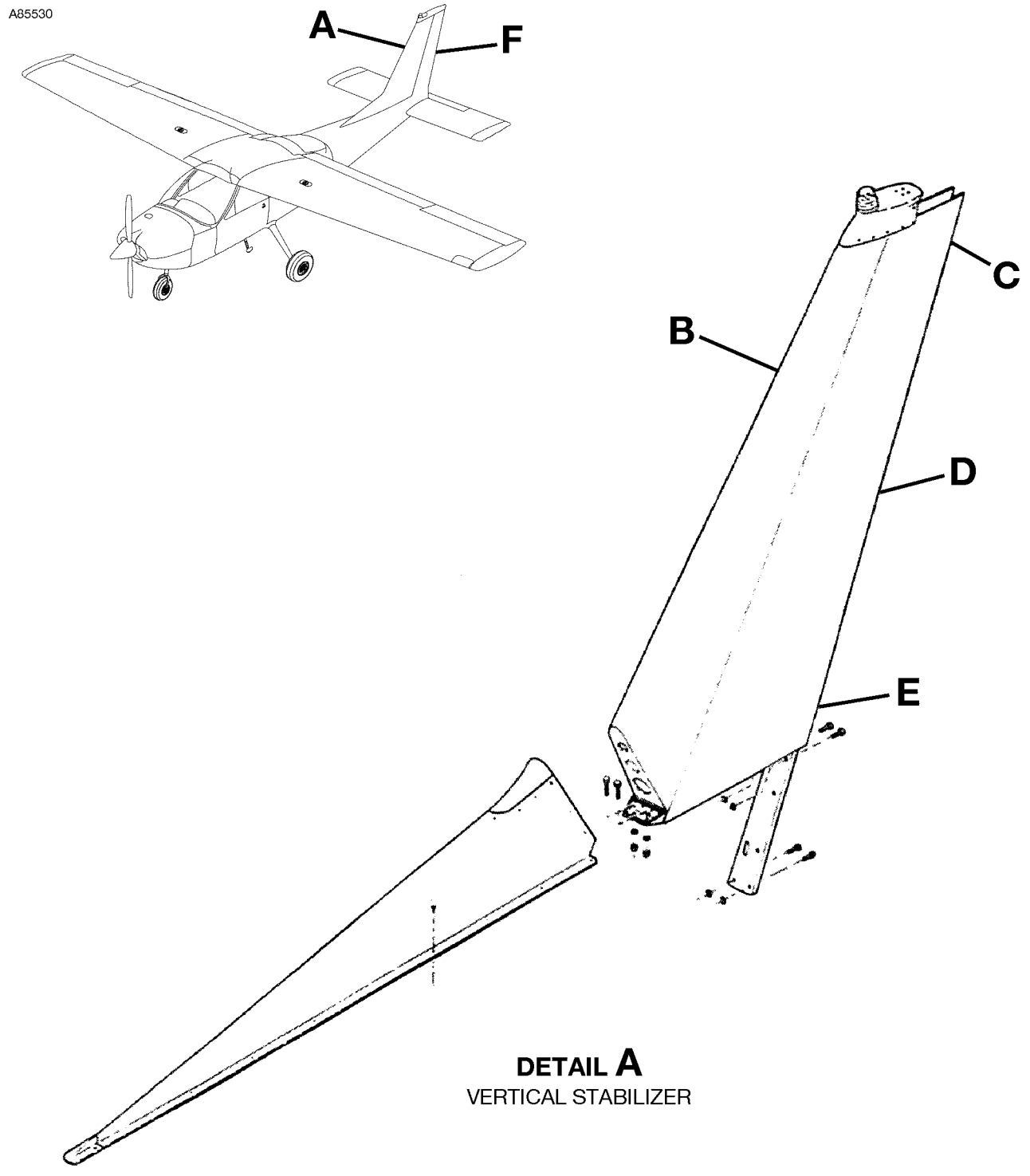
© Cessna Aircraft Company

7. REPAIR/MODIFICATION

Replace damaged bolts and nuts. Replace damaged fittings and small parts. Replace damaged or loose rivets. Hinge bearings are prepacked with grease, which will eventually oxidize and harden after years of service. Seized bearings must be replaced. Repairs may be made in accordance with Section 17 of the Model 177RG Service Manual. Any repair not available in Section 17 should be coordinated with Cessna Customer Service prior to beginning the repair.

8. COMMENTS

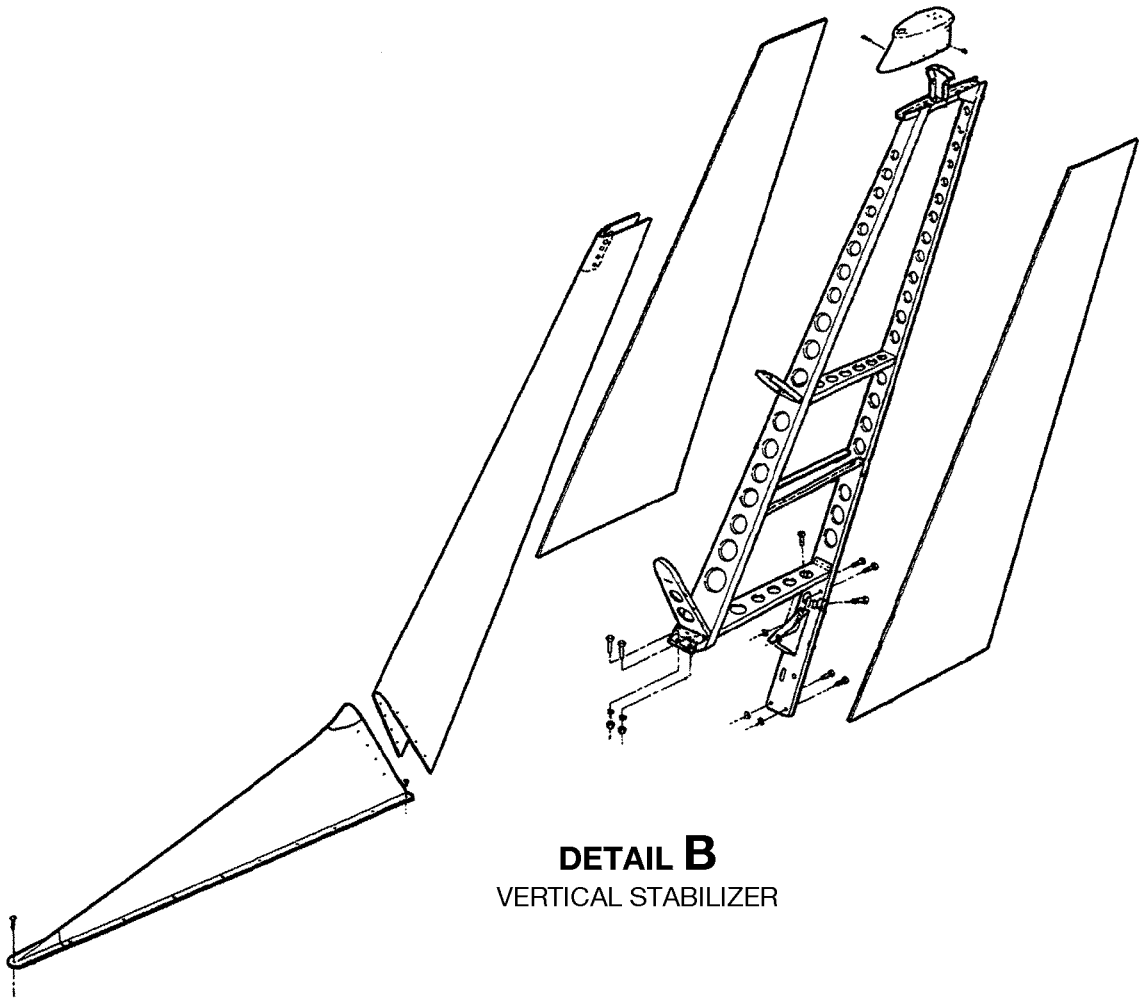
© Cessna Aircraft Company



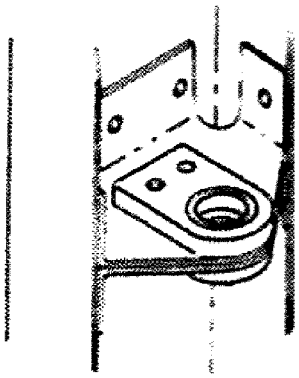
VERTICAL STABILIZER, RUDDER AND ATTACHMENTS INSPECTION
Figure 1 (Sheet 1)

© Cessna Aircraft Company

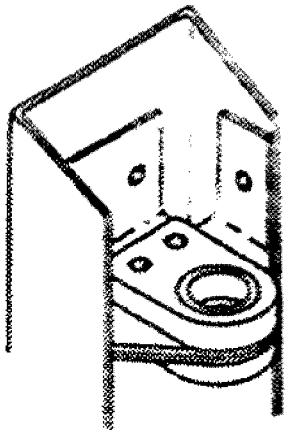
A85531



DETAIL B
VERTICAL STABILIZER



DETAIL D
MID RUDDER HINGE



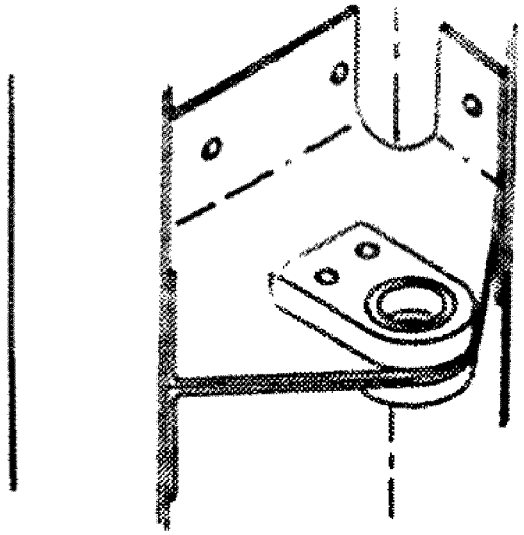
DETAIL C
UPPER RUDDER HINGE

0510T1035

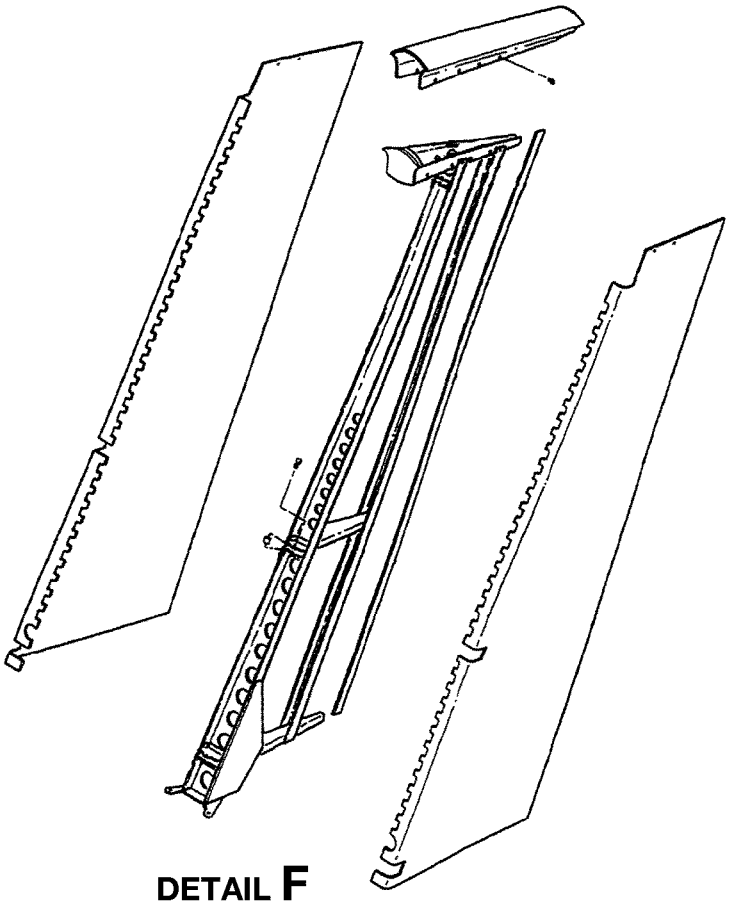
VERTICAL STABILIZER, RUDDER AND ATTACHMENTS INSPECTION
Figure 1 (Sheet 2)

© Cessna Aircraft Company

A85532



DETAIL E
LOWER RUDDER HINGE



DETAIL F
RUDDER

0510T1035

VERTICAL STABILIZER, RUDDER AND ATTACHMENTS INSPECTION
Figure 1 (Sheet 3)

© Cessna Aircraft Company

SUPPLEMENTAL INSPECTION NUMBER: 57-11-01

1. TITLE:
Wing Structure Inspection

2. EFFECTIVITY
177RG0788 thru 177RG1366, F177RG0139 thru F177RG0177

		INSPECTION COMPLIANCE		
TYPICAL:	**INITIAL**	12,000 Hours	or	20 Years **(NOTE)**
	REPEAT	3000 Hours	or	10 Years **(NOTE)**
SEVERE:	**INITIAL**	6000 Hours	or	10 Years **(NOTE)**
	REPEAT	1000 Hours	or	3 Years **(NOTE)**

NOTE: Refer to Note 1, Section 2A-14-00.

3. PURPOSE
To inspect the wing structure.

4. INSPECTION INSTRUCTIONS

A. Open all access panels and remove all fairings and the wing tips from the wings. Refer to the Model 177RG Service Manual.

B. Using a borescope where required, visually inspect for damage, corroded or cracked parts. Pay particular attention to the wing attach fittings where they attach to the carry-thru spar in the fuselage.
(1) Clean area before inspecting if grime or debris are present.

C. Visually inspect for working rivets at the inboard portion of the main wing spar.

NOTE: "Working" rivets will have a trail of black dust downwind from the fastener. The dust is oxidized aluminum produced by the fastener moving in the hole.

D. Visually inspect for working Hi-Shear rivets at the inboard spar fittings on main wing spar.

E. Visually inspect the trailing edge ribs and the spanwise segments supporting the flap actuator (LH wing) or flap bellcranks (RH wing).

F. Install previously removed access panels, fairings, and wing tips. Refer to the Model 177RG Service Manual.

5. ACCESS AND DETECTABLE CRACK SIZE

ACCESS/LOCATION/ZONE	**DETECTABLE CRACK SIZE**
Wing	Not Allowed

6. INSPECTION METHOD
Visual, borescope

© Cessna Aircraft Company

7. REPAIR/MODIFICATION

A. Replace working rivets through the wing skin and spar cap. Standard rivets are double dimpled MS20426AD5 rivets. Repair rivets (NAS1241AD5 - 11/64 diameter) or NAS1097AD6 - 3/16 diameter may be used without reworking the dimple. Replace working NAS1054-10 HiShear rivets with HL64 oversize HiLok fasteners, in the wing attach fittings in groups of three in holes reamed to 0.201 inch diameter. Install with HiLok collars.

8. COMMENTS

© Cessna Aircraft Company

SUPPLEMENTAL INSPECTION NUMBER: 57-11-02

1. TITLE:
Wing Structure Corrosion Inspection

2. EFFECTIVITY
177RG0788 thru 177RG1366, F177RG0139 thru F177RG0177

CORROSION SEVERITY	INSPECTION COMPLIANCE	
MILD/MODERATE:	**INITIAL**	20 Years **(NOTE)**
	REPEAT	10 Years **(NOTE)**
SEVERE:	**INITIAL**	10 Years **(NOTE)**
	REPEAT	5 Years **(NOTE)**

NOTE: Refer to Section 2A-30-01 and associated maps to determine corrosion severity.

3. PURPOSE
To ensure corrosion protection of the wing structure.

4. INSPECTION INSTRUCTIONS

A. Open all access panels and remove all fairings and the wing tips from the wings. Refer to the Model 177RG Service Manual.

B. Visually inspect for corrosion or traces of corrosion products.

C. Visually inspect for open fastener holes or loose rivets in the structure. Open fastener holes are an indication that a rivet has corroded and departed the airplane.

D. Use a borescope to inspect inaccessible areas.
(1) Some additional areas can be reached by threading the borescope probe through lightening holes in the trailing edge ahead of the flap and aileron.
(2) During the borescope inspection, pay particular attention to rivet butts and flanges containing rivets.

E. Install previously removed access panels, fairings, and wing tips. Refer to the Model 177RG Service Manual.

5. ACCESS AND DETECTABLE CRACK SIZE

ACCESS/LOCATION/ZONE	DETECTABLE CRACK SIZE
Wing	Not Allowed

6. INSPECTION METHOD
Visual, Borescope

7. REPAIR/MODIFICATION

A. If corrosion is present, it must be removed before refinishing. The recommended procedure to remove corrosion is by hand sanding, using a fine grained sandpaper.

NOTE: Particularly if corrosion is detected using a borescope, significant disassembly may be required to remove corrosion, and to refinish and repair surfaces. Contact Cessna Customer Service for assistance prior to beginning the repair if the disassembly exceeds the repair facilities experience or capability.

© Cessna Aircraft Company

B. Use 180 or finer grit abrasive cloth to produce a diameter-to-depth ratio of about 10:1. Use ultrasonic methods to determine thickness after removing corrosion. Repairs are required if thickness is less than 90% of uncorroded material.

C. Refinish sanded areas.
   (1) Solvent Wipe.
      (a) Wipe off excess oil, grease or dirt from the surface to be cleaned.
      (b) Apply solvent to a clean cloth, preferably by pouring solvent onto cloth from a safety can or other approved, labeled container. The cloth must be well saturated, but not dripping.
      (c) Wipe surface with the moistened cloth as necessary to dissolve or loosen soil. Work a small enough area so the surface being cleaned remains wet.
      (d) Immediately wipe the surface with a clean, dry cloth, while the solvent is still wet. Do not allow the surface to evaporate dry.
      (e) Do steps (b) through (d) again until there is no discoloration on the drying cloth.
   (2) Apply corrosion primer in accordance with Corrosion-Resistant Primer MIL-PRF-23377G or later.
      (a) Mix and apply in accordance with manufacturer's instructions.
      (b) Apply mixture with a wet cross coat to yield a dry film thickness of 0.6 to 0.8 mils.
      (c) Allow to air dry for two to four hours.

8. COMMENTS

© Cessna Aircraft Company

SUPPLEMENTAL INSPECTION NUMBER: 57-12-01

1. TITLE:
Wing Root Rib Corrosion Inspection

2. EFFECTIVITY
177RG0788 thru 177RG1366, F177RG0139 thru F177RG0177

CORROSION SEVERITY		INSPECTION COMPLIANCE
MILD/MODERATE:	**INITIAL**	5 Years **(NOTE)**
	REPEAT	5 Years **(NOTE)**
SEVERE:	**INITIAL**	3 Years **(NOTE)**
	REPEAT	3 Years **(NOTE)**

NOTE: Refer to Section 2A-30-01 and associated maps to determine corrosion severity.

3. PURPOSE
To ensure structural integrity of the root rib structure.

4. INSPECTION INSTRUCTIONS

A. Remove the wing to fuselage fairing. Refer to the Model 177RG Service Manual.

B. Visually inspect inboard side of root ribs at WS 26.00 for corrosion.
(1) Clean area before inspecting if grime or debris are present.

C. Remove the inspection cover (Radio Compartment Access Door), if fitted, outboard of WS 26.00.

D. Visually inspect outboard side of root ribs at WS 26.00 for corrosion.

E. Repair any corroded areas in accordance with Paragraph 7.

F. Install the wing to fuselage fairing and inspection cover. Refer to the Model 177RG Service Manual.

5. ACCESS AND DETECTABLE CRACK SIZE

ACCESS/LOCATION	DETECTABLE CRACK SIZE
Wing Root Rib	Not Allowed

6. INSPECTION METHOD
Visual

7. REPAIR/MODIFICATION

A. If corroded, sand corroded area lightly to remove corrosion. If corrosion is found on the outboard side of the rib, it may be necessary to provide additional access in the leading edge skin. Contact Cessna Customer Service for instructions for cut and repair.

B. Clean area thoroughly to assess remaining thickness.

C. If more than 20% of the thickness has been removed in any area, replace the rib. Up to 20% is acceptable if confined to an area of 2 inches or less in length, and less than one square inch in area.

D. Brush coat sanded areas with alodine.

8. COMMENTS

© Cessna Aircraft Company

SUPPLEMENTAL INSPECTION NUMBER: 57-30-01

1. TITLE:
Wing Front Spar Inspection

2. EFFECTIVITY
177RG0788 thru 177RG1366, F177RG0139 thru F177RG0177

		INSPECTION COMPLIANCE		
TYPICAL:	**INITIAL**	12,000 Hours	or	20 Years **(NOTE)**
	REPEAT	3000 Hours	or	10 Years **(NOTE)**
SEVERE:	**INITIAL**	6000 Hours	or	10 Years **(NOTE)**
	REPEAT	1000 Hours	or	3 Years **(NOTE)**

NOTE: Refer to Note 1, Section 2A-14-00.

3. PURPOSE
To ensure structural integrity of the wing front spar.

4. INSPECTION INSTRUCTIONS

A. Remove the wing root fairings. Refer to the Model 177RG Service Manual.

B. If the flight hours meet or exceed the **initial inspection compliance hours** (above), proceed to Detailed Attach Fitting Inspection.

C. Visual Attach Fitting Inspection
(1) Visually inspect the front spar attachment area for cracks or corrosion. Refer to Figure 1.
(a) Clean area before inspecting if grime or debris are present.
(b) If cracks or corrosion are found, proceed to Detailed Attach Fitting Inspection.
(c) If no cracks or corrosion are found, install fairings. The inspection is complete.

D. Detailed Attach Fitting Inspection
(1) Support the wing. Refer to Section 4 of the Model 177RG Service Manual.
(2) Remove a front spar attach bolt (remove one at a time, replace the first before removing the second) and conduct a bolt hole eddy current inspection for cracks in the wing attachment hole. Refer to Section 2A-13-01, Nondestructive Inspection Methods and Requirements, Eddy Current Inspection (Bolt Hole Inspection) for additional instructions.
(a) Clean area before inspecting if grime or debris are present.

NOTE: Use a brass or nonmetallic hammer to start the bolt from the hole if required. Use a slide hammer with a 9/16 or 3/8 inch diameter claw to complete the bolt removal.

(3) Visually inspect the area around the bolts for deformation of wing attachment holes. Check for surface cracks or surface corrosion in the vicinity of the bolts.
(4) Replace wing and fairings after the inspection. Refer to the Model 177RG Service Manual.

5. ACCESS AND DETECTABLE CRACK SIZE

ACCESS/LOCATION	DETECTABLE CRACK SIZE
Front spar	Not Allowed

6. INSPECTION METHOD
Visual, Eddy Current if required

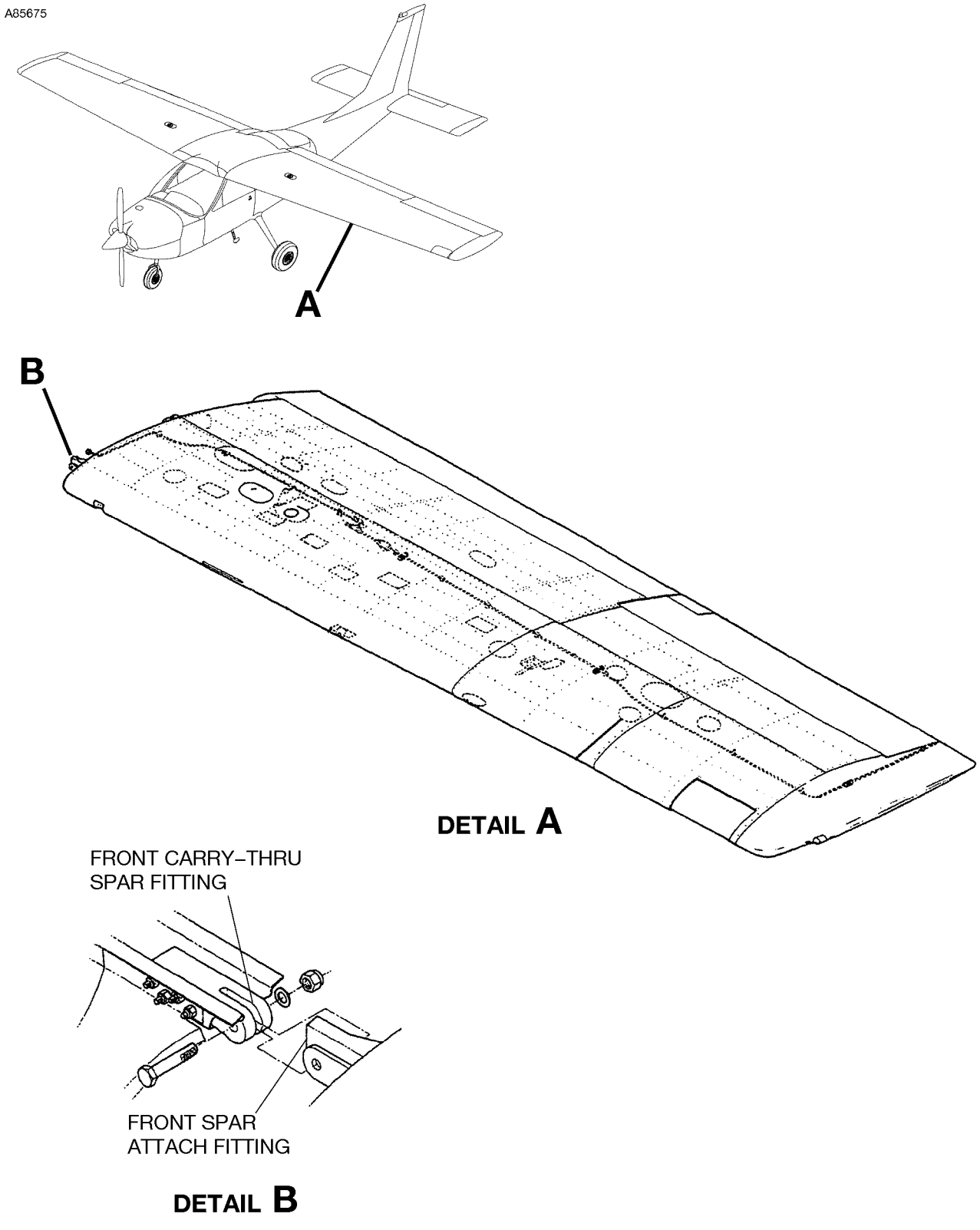
© Cessna Aircraft Company

7. REPAIR/MODIFICATION

Replace cracked or excessively corroded parts.

8. COMMENTS

© Cessna Aircraft Company



WING FRONT SPAR INSPECTION
Figure 1 (Sheet 1)

© Cessna Aircraft Company

SUPPLEMENTAL INSPECTION NUMBER: 57-51-01

1. TITLE:
Aileron Support Structure Inspection

2. EFFECTIVITY
177RG0788 thru 177RG1366, F177RG0139 thru F177RG0177

		INSPECTION COMPLIANCE		
ALL USAGE:	**INITIAL**	12,000 Hours	or	20 Years **(NOTE)**
	REPEAT	3000 Hours	or	5 Years **(NOTE)**

NOTE: Refer to Note 1, Section 2A-14-00.

3. PURPOSE
To ensure structural integrity of the Aileron Support Structure.

4. INSPECTION INSTRUCTIONS

A. Remove the ailerons in accordance with the Model 177RG Service Manual.

B. Visually inspect the aileron hinges for condition, cracks and security; hinge bolts, hinge bearings for condition and security; bearings for freedom of rotation; hinge and pushrod attach fittings for evidence of damage, wear, failed fasteners and security. Refer to Figure 1.
(1) Clean area before inspecting if grime or debris are present.

C. Visually inspect aileron hinge fittings for cracks. If cracks are suspected, if corrosion is found, or if flight hours exceed 12,000 hours, conduct Surface Eddy Current Inspection. Refer to Section 2A-13-01 (Nondestructive Inspection Methods and Requirements), Eddy Current Inspection – Surface Inspection for additional instructions.

NOTE: The inspection is for the aluminum structure outside of the bearing and the steel sleeve, so set the instrument for aluminum.

D. Install the ailerons in accordance with the Model 177RG Service Manual.

5. ACCESS AND DETECTABLE CRACK SIZE

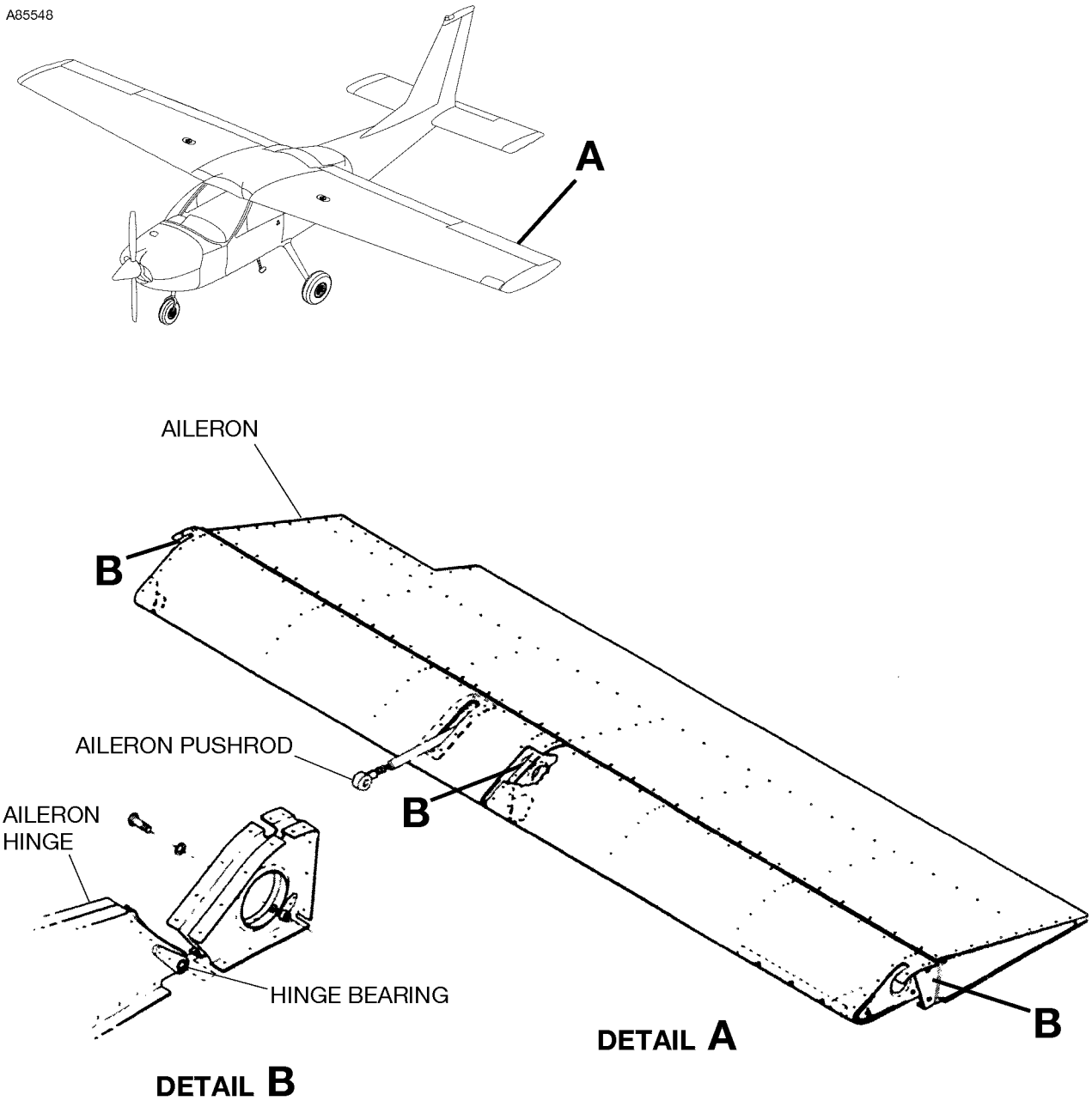
ACCESS/LOCATION	DETECTABLE CRACK SIZE
Wings	Not Allowed

6. INSPECTION METHOD
Visual and Eddy Current

7. REPAIR/MODIFICATION
Replace any damaged or cracked fittings. Replace damaged hinge bolts. Replace loose, corroded or excessively tight bearings. Repairs may be made in accordance with Section 17 of the Model 177RG Service Manual. Any repair not available in the Model 177RG Service Manual should be coordinated with Cessna Customer Service prior to beginning the repair.

8. COMMENTS
Aileron hinges may be replaced in lieu of eddy current inspection.

© Cessna Aircraft Company



AILERON SUPPORT STRUCTURE INSPECTION
Figure 1 (Sheet 1)

© Cessna Aircraft Company

SUPPLEMENTAL INSPECTION NUMBER: 57-53-01

1. TITLE

Flap Tracks Inspection

2. EFFECTIVITY

177RG0788 thru 177RG1366, F177RG0139 thru F177RG0177

CORROSION SEVERITY	INSPECTION COMPLIANCE	
MILD/MODERATE:	**INITIAL**	10 years **(NOTE)**
	REPEAT	5 years **(NOTE)**
SEVERE:	**INITIAL**	5 years **(NOTE)**
	REPEAT	2 years **(NOTE)**

NOTE: Refer to Section 2A-30-01 and associated maps to determine corrosion severity.

3. PURPOSE

To ensure the integrity of the flap tracks.

4. INSPECTION INSTRUCTIONS

A. Visually inspect the inboard and outboard flap tracks for exfoliation corrosion, particularly along exterior edges and edges of roller tracks. Refer to Figure 1.
   (1) Clean area before inspecting if grime or debris are present.

5. ACCESS AND DETECTABLE CRACK SIZE

ACCESS/LOCATION	DETECTABLE CRACK SIZE
Flap Tracks	Not Allowed

6. INSPECTION METHOD

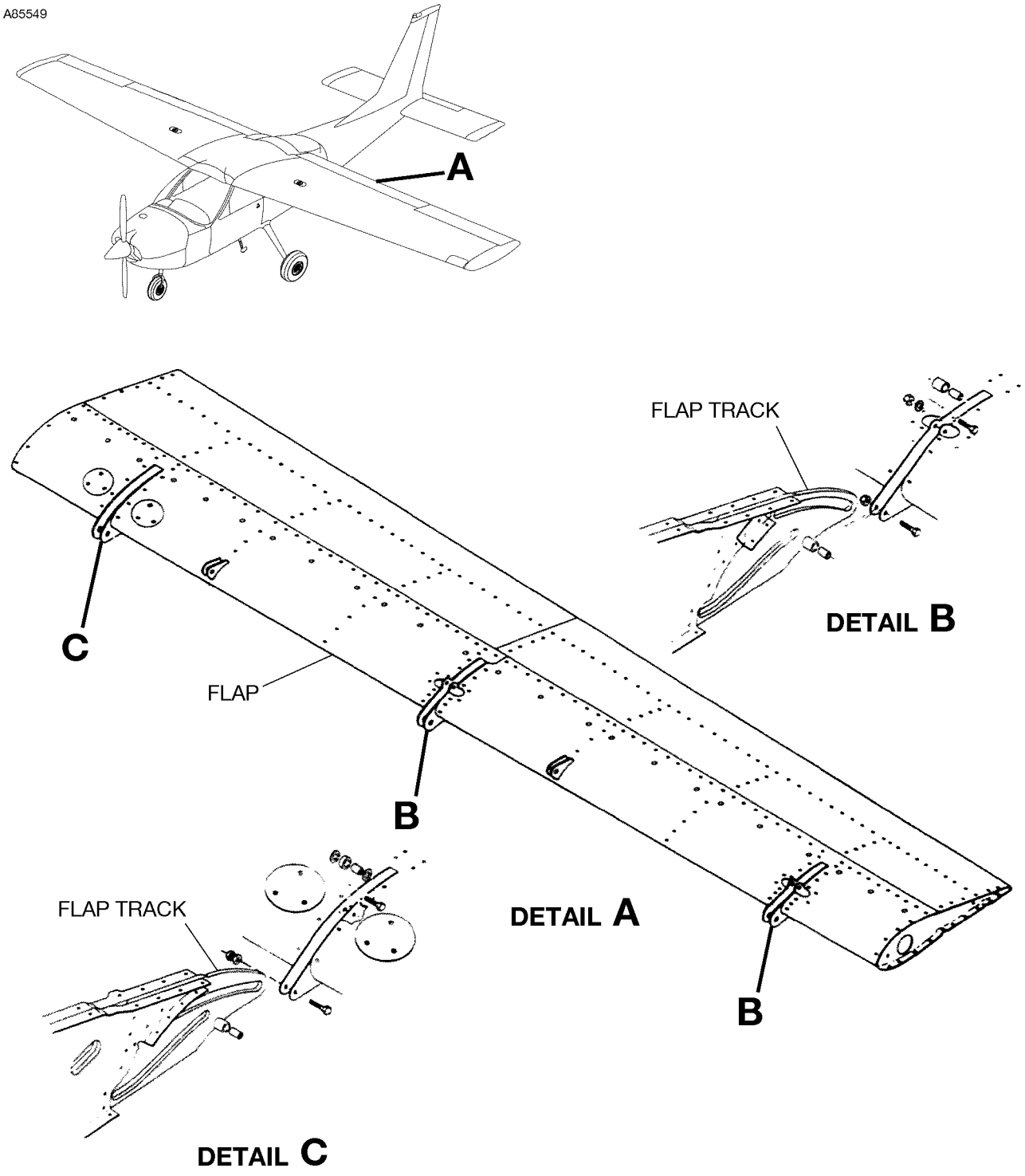
Visual

7. REPAIR/MODIFICATION

Replace damaged flap tracks.

8. COMMENTS

© Cessna Aircraft Company



FLAP TRACKS INSPECTION
Figure 1 (Sheet 1)

© Cessna Aircraft Company

SUPPLEMENTAL INSPECTION NUMBER: 71-20-01

1. TITLE:
Engine Mount Inspection

2. EFFECTIVITY
177RG0788 thru 177RG1366, F177RG0139 thru F177RG0177

INSPECTION COMPLIANCE

ALL USAGE:	**INITIAL**	10,000 hours	or	20 Years	**(NOTE)**
	REPEAT	5000 hours	or	at Engine Overhaul	**(NOTE)**

NOTE: Refer to Note 1, Section 2A-14-00.

3. PURPOSE
To ensure structural integrity of the engine mount.

4. INSPECTION INSTRUCTIONS

A. Remove cowl, engine and sufficient accessories to allow removal of the tubular engine mount. Refer to the Model 177RG Service Manual.

B. Clean area before inspecting if grime or debris are present.

C. Conduct a visual inspection for cracks in the welds of the tubular engine mount and within three inches on either side of the welds. Use a bright light and magnifier of 7x or greater to aid in inspection.

D. If rust is found, cracks are suspected, or if airplane has exceeded the compliance time listed above, remove the tubular engine mount. Conduct a magnetic particle inspection of these areas. Refer to Section 2A-13-01 (Nondestructive Inspection Methods and Requirements), Magnetic Particle Inspection, for additional instructions.

E. Replace the engine mount, engine, previously removed accessories, and the cowl. Refer to the Model 177RG Service Manual.

5. ACCESS AND DETECTABLE CRACK SIZE

ACCESS/LOCATION	DETECTABLE CRACK SIZE
Under cowl	Not allowed

6. INSPECTION METHOD
Visual and Magnetic Particle

7. REPAIR/MODIFICATION
Repair any cracks by rewelding. Prior to welding, locate either a drive pin or a hole welded shut in the tube to be welded. Open the hole prior to welding. After welding, while the welded area is still hot, introduce 3cc of raw (unboiled) Linseed oil, or 6cc of corrosion preventative compound conforming to MIL-PRF-81309, through the hole and reseal it using the same method as was used in the original fabrication. The engine mount is not heat treated after welding, so no processing after welding is required. Repairs may be made in accordance with Section 17 of the Model 177RG Service Manual. Any repair not available in Section 17 listed above should be coordinated with Cessna Customer Service prior to beginning the repair.

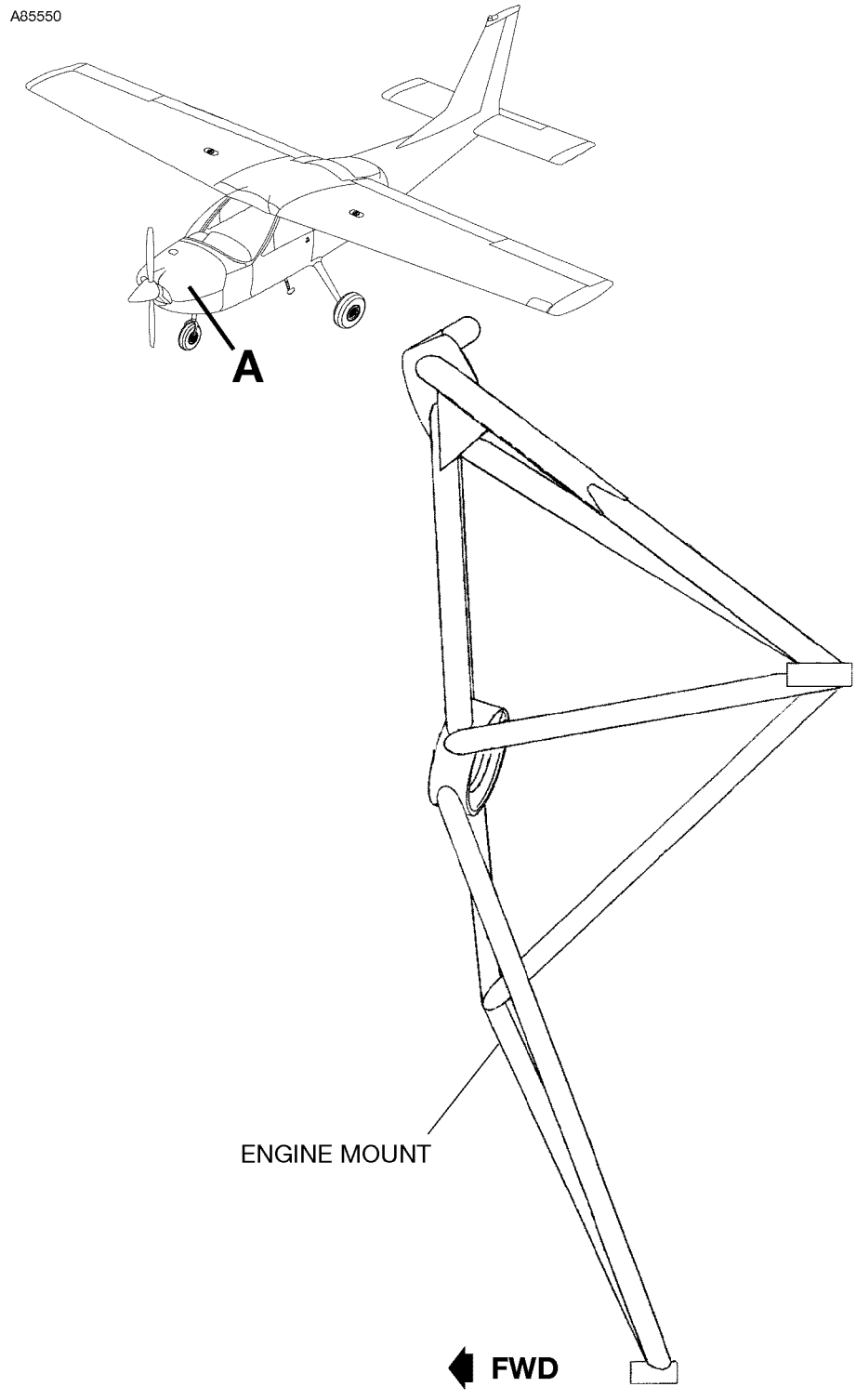
© Cessna Aircraft Company

8. COMMENTS

This inspection supersedes and replaces CAP 71-20-00.

This is a complex and involved inspection. It is recommended that the inspection be coordinated with an engine overhaul, even if the time does not exactly agree with inspection hours. Initial and recurring inspections will be satisfied by inspections at engine overhaul unless the 10,000 hour threshold has been reached. The initial inspection must be completed by June 30, 2015.

© Cessna Aircraft Company



ENGINE MOUNT INSPECTION
Figure 1 (Sheet 1)

© Cessna Aircraft Company

EXPANDED MAINTENANCE

1. Control Cables

A. The chromium nickel steel wire is helically twisted into strands and the strands laid about other strands forming the flexible steel cable. The diameter of the cable is determined by the number of wires and the number of strands in the cable.

(1) Construction of Cables

(a) Cable diameter, 1/32 inch, 3 by 7 construction - Cable of this construction shall consist of three strands of seven wires each. There shall be no core in this construction. The cable shall have a length of lay of not more than eight times nor less than five times the nominal cable diameter.

(b) Cable diameter, 1/16 inch and 3/32 inch, 7 by 7 construction - Cable of this construction shall consist of six strands of seven wires each, laid around a core strand of seven wires. The cable shall have a length of lay of not more than eight times nor less than six times the nominal cable diameter.

(c) Cable diameter, 1/8 inch through 3/8 inch, 7 by 19 construction - Cable of this construction shall consist of six strands laid around a core strand. The wire composing the seven individual strands shall be laid around a central wire in two layers. The single core strand shall consist of a layer of 6 wires laid around the central wire in a right direction, and a layer of 12 wires laid around the 7 wire strand in a right direction. The 6 outer strands of the cable shall consist of a layer of 6 wires laid around the central wire in a left direction, and a layer of 12 wires laid around the 7 wire strand in a left direction.

(d) Lubrication - A pressure type friction preventative compound, having noncorrosive properties, is applied during construction as follows:

- Friction preventative compound is continuously applied to each wire as it is formed into a strand so that each wire is completely coated.
- Friction preventative compound is continuously applied to each strand as it is formed into a cable so that each strand is completely coated.

(e) Definitions - The following definitions pertain to flexible steel cable:

- Wire - Each individual cylindrical steel rod or thread shall be designated as a wire.
- Strand - Each group of wires helically twisted or laid together shall be designated as a strand.
- Cable - A group of strands helically twisted or laid about a central core shall be designated as a cable. The strands and the core shall act as a unit.
- Diameter - The diameter of cable is the diameter of the circumscribing circle.
- Wire Center - The center of all strands shall be an individual wire and shall be designated as a wire center.
- Strand Core - A strand core shall consist of a single straight strand made of preformed wires, similar to the other strands comprising the cable in arrangement and number of wires.
- Preformed Type - Cable consisting of wires and strands shaped, prior to fabrication of the cable, to conform to the form or curvature which they take in the finished cable, shall be designated as preformed types.
- Lay or Twist - The helical form taken by the wires in the strand and by the strands in the cable is characterized as the lay or twist of the strand or cable respectively. In a right lay, the wires or strands are in the same direction as the thread on a right screw, and for a left lay, they are in the opposite direction.
- Pitch (or length of lay) - The distances, parallel to the axis of the strand or cable, in which a wire or strand makes one complete turn about the axis, is designated as the pitch (or length of lay) of the strand or cable respectively.

© Cessna Aircraft Company

B. Inspection of Cable System

NOTE: For tools and equipment used in checking and rigging, refer to the appropriate sections of the Model 177RG Service Manual.

(1) Routing
  (a) Examine cable runs for incorrect routing, fraying and twisting. Look for interference with adjacent structure, equipment, wiring, plumbing and other controls.
  (b) Check cable movement for binding and full travel. Observe cables for slack when moving the corresponding controls.

(2) Cable Fittings
  (a) Check swaged fitting reference marks for an indication of cable slippage within the fitting. Inspect the fitting for distortion, cracks and broken wires at the fitting.
  (b) Check turnbuckles for proper thread exposure. Also, check turnbuckle locking clip or safety wire.

(3) Inspection of Control Cable.
  (a) The control cable assemblies are subjected to a variety of environmental conditions and forms of deterioration that ultimately may be easy to recognize as wire/strand breakage or the not-so-readily visible types of corrosion and/or distortion. The following data will aid in detecting an unserviceable cable condition:
  (b) Broken Wire
    1 Examine cables for broken wires by passing a cloth along the length of the cable. This will detect broken wires, if the cloth snags on the cable. Critical areas for wire breakage are those sections of the cable which pass through fairleads, across rub blocks and around pulleys. If no snags are found, then no further inspection is required. If snags are found or broken wires are suspected, then a more detailed inspection is necessary, which requires that the cable be bent in a loop to confirm the broken wires. Refer to Figure 1 for an example. Loosen or remove the cable to allow it to be bent in a loop as shown. Refer to Table 1 for bend diameter criteria. While rotating cable, inspect the bent area for broken wires.

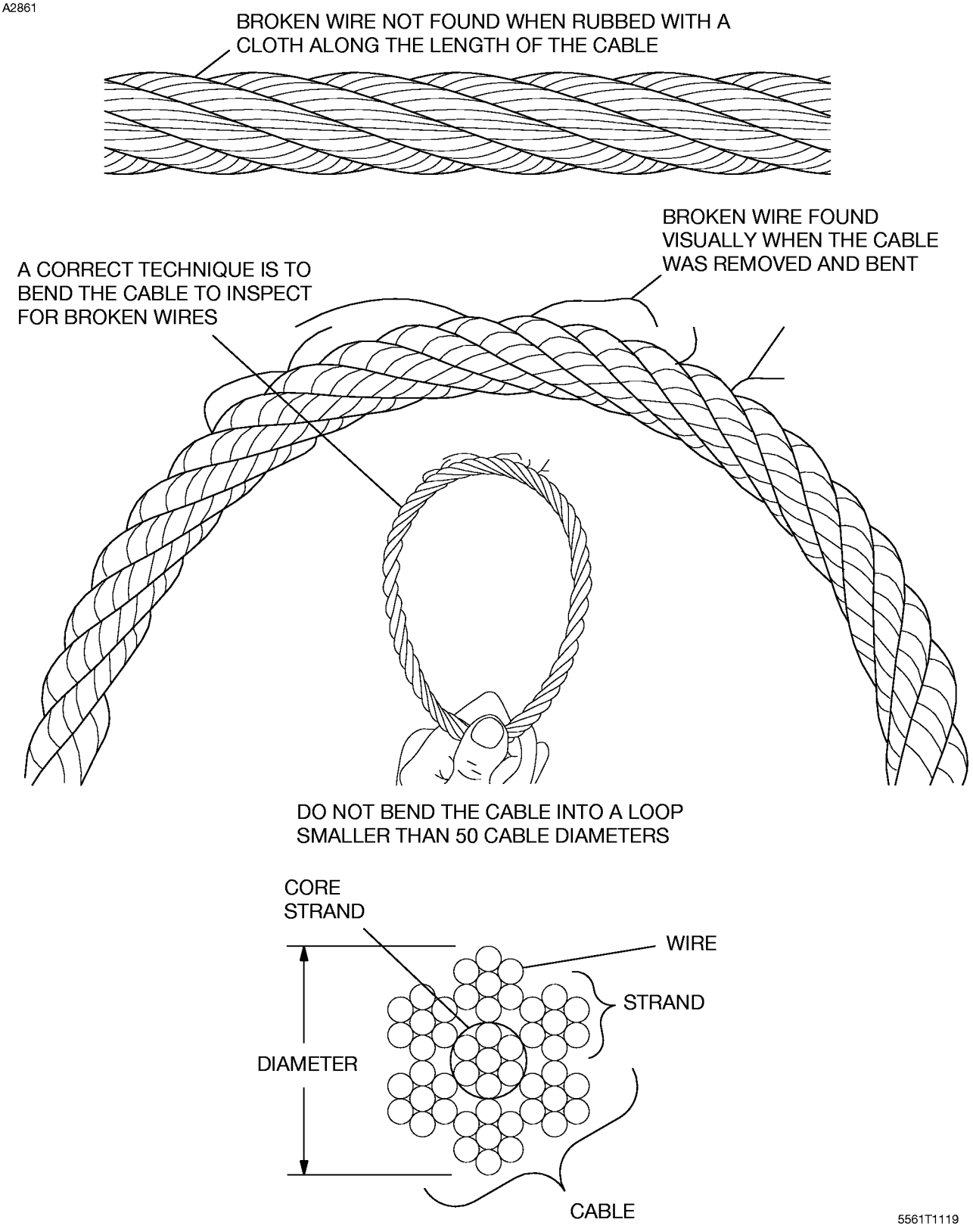
Table 1. Loop and Coil Diameter Criteria

Cable Diameter	Smallest Allowable Loop Diameter (Loop Test)	Smallest Allowable Inside Diameter of Coil (Cable Storage)
1/32 Inch	1.6 Inch	4.7 Inch
1/16 Inch	3.2 Inch	9.4 inch
3/32 Inch	4.7 Inch	14.1 Inch
1/8 Inch	6.3 Inch	18.8 Inch
5/32 Inch	7.9 Inch	23.5 Inch
3/16 Inch	9.4 Inch	28.2 Inch

    2 Wire breakage criteria for the cables in the flap, aileron, rudder, and elevator systems are as follows:
      a Individual broken wires are acceptable in primary and secondary control cables at random locations when there are no more than three broken wires in any given 10-inch (0.254 m) cable length.
    3 Corrosion
      a Carefully examine any cable for corrosion that has a broken wire in a section not in contact with wear producing airframe components, such as pulleys, fairleads, rub blocks, etc. It may be necessary to remove and bend the cable to properly inspect it for internal strand corrosion, as this condition is usually not evident

© Cessna Aircraft Company

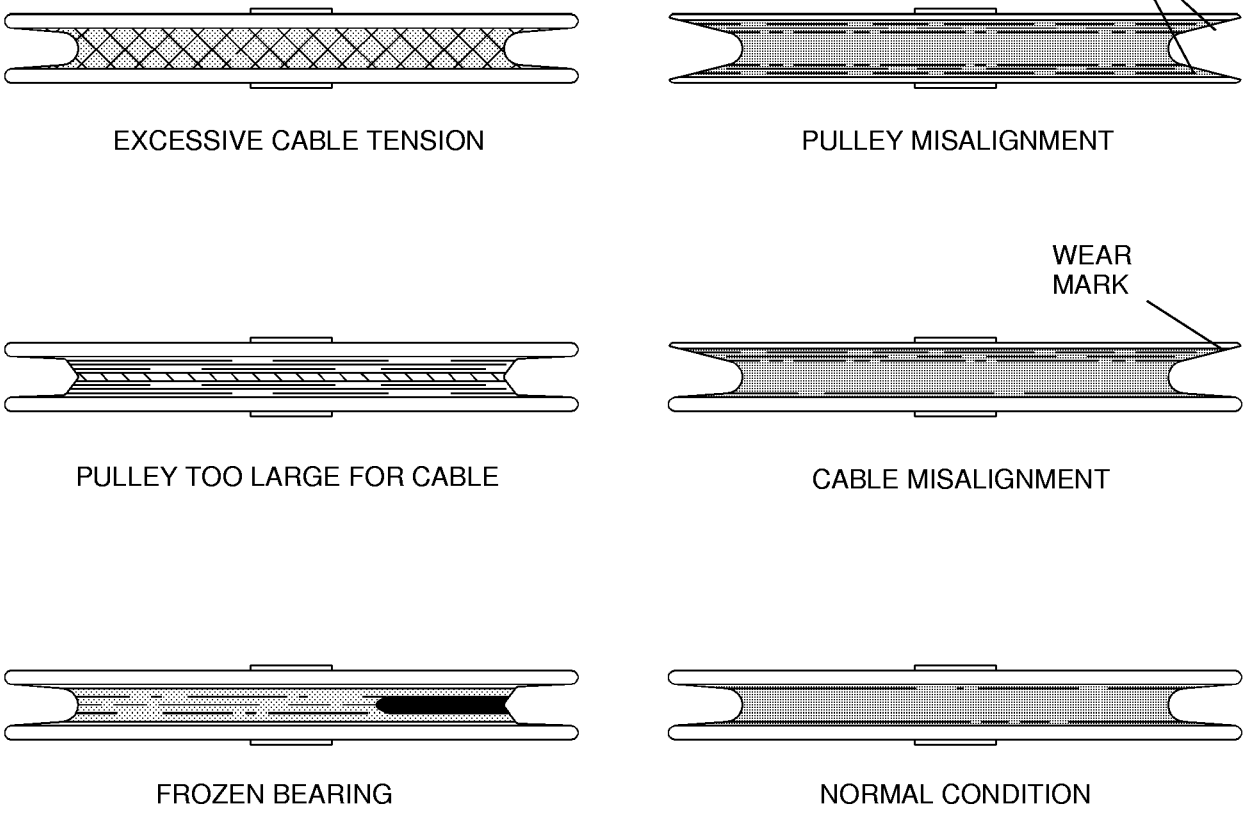
A2861



Cable Broken Wires and Pulley Wear Patterns
Figure 1 (Sheet 1)

© Cessna Aircraft Company

A2867



5561T1115

Cable Broken Wires and Pulley Wear Patterns
Figure 1 (Sheet 2)

© Cessna Aircraft Company

on the outer surface of the cable. Replace cable if internal corrosion is found. For description of control cable corrosion, refer to Section 2A-30-01, paragraph 4(C), Steel Control Cables.

b Areas conducive to cable corrosion are below the refreshment center, in the wheel well, and in the tailcone. Also, if a cable has been wiped clean of its corrosion preventative lubricant and metal-brightened, the cable must be examined closely for corrosion.

(4) Pulleys

(a) Inspection of Pulleys

1 Inspect pulleys for roughness, sharp edges and presence of foreign material embedded in the grooves. Examine pulley bushings or bearings to ensure smooth rotation, freedom from flat spots, and foreign material.

2 Periodically rotate pulleys, which turn through a small arc, to provide a new bearing surface for the cable.

3 Check pulley alignment. Check pulley brackets and guards for damage, alignment and security. Various failures of the cable system may be detected by analyzing pulley conditions. Refer to Figure 1 for pulley wear patterns; these include such discrepancies as too much tension, misalignment, pulley bearing problems and size mismatch between cable and pulley.

(5) Cable Storage

(a) Cable assemblies shall be stored straight or in a coil. When stored in coil form, the coil inside diameter shall not be less than 150 times the cable diameter or bent in a radius of not less than 75 times the cable diameter. Refer to Table 1 for coil diameter criteria. Coils shall not be flattened, twisted or folded during storage. Storage requirements shall apply until the cable is installed in its normal position in the airplane. If only a part of the cable is installed in an assembly, cable storage requirements apply to the uninstalled portion of the cable.

(6) Flight Control Cable Inspection

(a) General Information

WARNING: If the flight control cable system(s) are removed, disconnected, or cable section(s) are replaced, make sure that all rigging, travel checks, cable tensions, and control surface checks are done in accordance with the procedures in the appropriate section for the affected flight control system.

NOTE: Flight control cable inspections are normally performed without removing or disconnecting any part of the flight control system. However, it may be necessary to derig or remove the cable to get access to the entire cable.

(b) Cable Inspection Procedure

1 Each flight control cable must be visually inspected along its entire length for evidence of broken wires, corrosion, fraying or other damage. Visual inspection may be via direct sight, mirror and flashlight or borescope.

2 Visually check for proper routing along entire length of cable. Make sure that cables, pulleys, attaching sectors, and bell cranks are free and clear of structure and other components

NOTE: Some systems use rub blocks, it is permissible for control cables to rub against these blocks.

© Cessna Aircraft Company

3 Each flight control cable will be physically inspected, by passing a cloth along the entire cable. Pay particular attention at all pulley, fairlead, bulkhead seal locations and other locations where the cable may be subject to chafing or wear.

NOTE: It may be necessary to have a second person move the flight control system being inspected to ensure that the entire cable run in an affected area is checked.

4 Any flight control cable which snags the cloth due to broken wires is to be slackened (if not previously slackened) and a loop test performed to identify number and location of individual broken wires (refer to Inspection of Control Cable). Wire breakage criteria is as follows for all cable systems:

a Individual broken wires are acceptable in any cable provided that no more than three individual wires are broken in any given ten-inch (0.254 m) cable length. If number of individual broken wires cannot be determined, cable is to be rejected. Any amount of cable or wire wear is acceptable, provided the individual broken wire criteria is met.

b Reject any cable if corrosion is found which appears to have penetrated into interior of cable. If extent of corrosion cannot be determined, cable is to be rejected.

5 Inspect all cable termination fittings (clevises, turnbuckles, anchors, swagged balls, etc.) for security of installation, proper hardware and evidence of damage.

a All turnbuckles are required to be secured. Safety wire or prefabricated clips are acceptable.

6 Inspect cable pulleys.

a Inspect all pulleys for security of installation, evidence of damage and freedom of rotation.

b Pulleys which do not rotate with normal cable movement due to internal bearing failure are to be rejected.

c Pulleys with grooving etc., due to normal in-service use, are deemed serviceable, as long as overall function is not impaired.

7 Restore cable system as required following cable teardown (if performed).

a Tension tasks and other tasks specific to individual systems are described under applicable individual tasks.

b Any flight control cable system which has been torn down requires a flight control rigging check prior to release of airplane for flight.

© Cessna Aircraft Company

CORROSION PREVENTION AND CONTROL PROGRAM (CPCP)

1. Introduction

A. As the airplane ages, corrosion occurs more often, while, at the same time, other types of damage such as fatigue cracks occur. Corrosion can cause damage to the airplane's structural integrity and if it is not controlled, the airframe will carry less load than what is necessary for continued airworthiness.
   (1) To help prevent this, we started a Corrosion Prevention and Control Program (CPCP). A CPCP is a system to control the corrosion in the airplane's primary structure. It is not the function of the CPCP to stop all of the corrosion conditions, but to control the corrosion to a level that the airplane's continued airworthiness is not put in risk.

B. Complete the initial CPCP inspection in conjunction with the first SID inspection.

2. Corrosion Prevention and Control Program Objective

A. The objective of the CPCP is to help to prevent or control the corrosion so that it does not cause a risk to the continued airworthiness of the airplane.

3. Corrosion Prevention and Control Program Function

A. The function of this document is to give the minimum procedures necessary to control the corrosion so that the continued airworthiness is not put in risk. The CPCP consists of a Corrosion Program Inspection number, the area where the inspection will be done, specified corrosion levels and the compliance time. The CPCP also includes procedures to let Cessna Aircraft Company and the regulatory authorities know of the findings and the data associated with Level 2 and Level 3 corrosion. This includes the actions that were done to decrease possible corrosion in the future to Level 1.

B. Maintenance or inspection programs need to include a good quality CPCP. The level of corrosion identified on the Principal Structural Elements (PSEs) and other structure listed in the Baseline Program will help make sure the CPCP provides good corrosion protection.

NOTE: A good quality program is one that will control all structural corrosion at Level 1 or better.

C. Corrosion Program Levels.

NOTE: In this manual the corrosion inspection tasks are referred to as the corrosion program inspection.

(1) Level 1 Corrosion.
   (a) Corrosion damage occurring between successive inspection tasks, that is local and can be reworked or blended out with the allowable limit.
   (b) Local corrosion damage that exceeds the allowable limit but can be attributed to an event not typical of the operator's usage or other airplanes in the same fleet (e.g., mercury spill).
   (c) Operator experience has demonstrated only light corrosion between each successive corrosion task inspection; the latest corrosion inspection task results in rework or blend out that exceeds the allowable limit.

(2) Level 2 Corrosion.
   (a) Level 2 corrosion occurs between two successive corrosion inspection tasks that requires a single rework or blend-out that exceeds the allowable limit. A finding of Level 2 corrosion requires repair, reinforcement or complete or partial replacement of the applicable structure.

(3) Level 3 Corrosion.
   (a) Level 3 corrosion occurs during the first or subsequent accomplishments of a corrosion inspection task that the operator determines to be an urgent airworthiness concern.

4. References

A. This is a list of references for the Corrosion Prevention and Control Program.
   (1) FAA Advisory Circular AC120-CPCP, Development and Implementation of Corrosion Prevention and Control Program

© Cessna Aircraft Company

(2) FAA Advisory Circular AC43-4A, Corrosion Control for Aircraft
(3) Cessna Illustrated Parts Catalog - part number P700-12.
(4) Cessna Service Manual - part number D2009-4-13.

5. Control Prevention and Control Program Application

A. The Corrosion Prevention and Control Program gives the information required for each corrosion inspection. Maintenance personnel must fully know about corrosion control. The regulatory agency will give approval and monitor the CPCP for each airplane.
(1) The CPCP procedures apply to all airplanes that have exceeded the inspection interval for each location on the airplane. Refer to the Glossary and the Baseline Program.
(a) Cessna Aircraft Company recommends that the CPCP be done first on older airplanes and areas that need greater changes to the maintenance procedures to meet the necessary corrosion prevention and control requirements.
(2) Maintenance programs must include corrosion prevention and control procedures that limit corrosion to Level 1 or better on all Principal Structural Elements (PSEs) and other structure specified in the Baseline Program. If the current maintenance program includes corrosion control procedures in an inspection area and there is a report to show that corrosion is always controlled to Level 1 or better, the current inspection program can be used.
(a) The Baseline Program is not always sufficient if the airplane is operated in high humidity (severe) environments, has a corrosive cargo leakage or has had an unsatisfactory maintenance or repair. When this occurs, make adjustments to the Baseline Program until the corrosion is controlled to Level 1 or better. Refer to Section 2A-30-01, Corrosion Severity Maps, to determine the severity of potential corrosion.
(3) The CPCP consists of the corrosion inspection applied at a specified interval and, at times, a corrosion inspection interval can be listed in a Service Bulletin. For the CPCP to be applied, remove all systems, equipment and interior furnishings that prevent sufficient inspection of the structure. A nondestructive test (NDI) or a visual inspection can be necessary after some items are removed if there is an indication of hidden corrosion such as skin deformation, corrosion under splices or corrosion under fittings. Refer to the Baseline Program.
(4) The corrosion rate can change between different airplanes. This can be a result of different environments the airplane operates in, flight missions, payloads, maintenance practices (for example more than one owner), variation in rate of protective finish or coating wear.
(a) Some airplanes that operate under equivalent environments and maintenance practices can be able to extend the inspection intervals if a sufficient number of inspections do not show indications of corrosion in that area. Refer to the Glossary.
(5) Later design and/or production changes done as a result of corrosion conditions can delay the start of corrosion. Operators that have done corrosion-related Service Bulletins or the improved procedures listed in the Corrosion Program Inspection can use that specified inspection interval. Unless the instructions tell you differently, the requirements given in this document apply to all airplanes.
(6) Another system has been added to report all Level 2 and Level 3 corrosion conditions identified during the second and each subsequent CPCP inspection. This information will be reviewed by Cessna Aircraft Company to make sure the Baseline Program is sufficient and to change it as necessary.

6. Baseline Program

A. The Baseline Program is part of the Corrosion Prevention and Control Program (CPCP). It is divided into Basic Task and Inspection Interval. In this manual the Basic Tasks are referred to as the Corrosion Program Inspection. This program is to be used on all airplanes without an approved CPCP. Those who currently have a CPCP that does not control corrosion to Level 1 or better must make adjustments to the areas given in the Baseline Program.

B. Typical Airplane Zone Corrosion Program Inspection Procedures.
(1) Remove all the equipment and airplane interior (for example the insulation, covers and, upholstery) as necessary to do the corrosion inspection.
(2) Clean the areas given in the corrosion inspection before you inspect them.

© Cessna Aircraft Company

(3) Do a visual inspection of all of the Principal Structural Elements (PSEs) and other structure given in the corrosion inspection for corrosion, cracking and deformation.
   (a) Carefully examine the areas that show that corrosion has occurred before.

      NOTE: Areas that need a careful inspection are given in the corrosion inspection.

   (b) Nondestructive testing inspections or visual inspections can be needed after some disassembly if the inspection shows a bulge in the skin, corrosion under the splices or corrosion under fittings. Hidden corrosion will almost always be worse when fully exposed.
(4) Remove all of the corrosion, examine the damage and repair or replace the damaged structure.
   (a) Apply a protective finish where it is required.
   (b) Clean or replace the ferrous metal fasteners with oxidation.
(5) Remove blockages of foreign object debris so that the holes and clearances between parts can drain.
(6) For bare metal on any surface of the airplane, apply corrosion prevention primer, refer to the Application of Corrosion Preventative Compounds.
   (a) Apply a polyurethane topcoat paint to the exterior painted surface. Refer to the manufacturer's procedures.
(7) Install the dry insulation blankets.
(8) Install the equipment and airplane interior that was removed to do the corrosion inspection.

7. Baseline Program Implementation

A. The Baseline Program is divided into specific inspection areas and zone locations. The inspection areas and zone locations apply to all airplanes. Refer to Figure 1, Airplane Zones.

8. Reporting System

A. Corrosion Prevention and Control Program Reporting System (Refer to Figure 2).
   (1) The Corrosion Prevention and Control Program (CPCP) includes a system to report to Cessna Aircraft Company data that will show that the Baseline Program is sufficient and, if necessary, make changes.
   (2) At the start of the second Corrosion Program Inspection of each area, report all Level 2 and Level 3 Corrosion results that are listed in the Baseline Program to Cessna Aircraft Company. Send the Control Prevention and Control Program Damage Reporting Form to: Cessna Aircraft Company, Customer Service, P.O. Box 7706, Wichita, KS, 67277 USA Phone: (316) 517-5800, FAX: (316) 517-7271.

9. Periodic Review

A. Use the Service Difficulty Reporting System to report all Level 2 and Level 3 Corrosion results to the FAA and to Cessna Aircraft Company. All corrosion reports received by Cessna Aircraft Company will be reviewed to determine if the Baseline Program is adequate.

10. Corrosion Related Airworthiness Directives

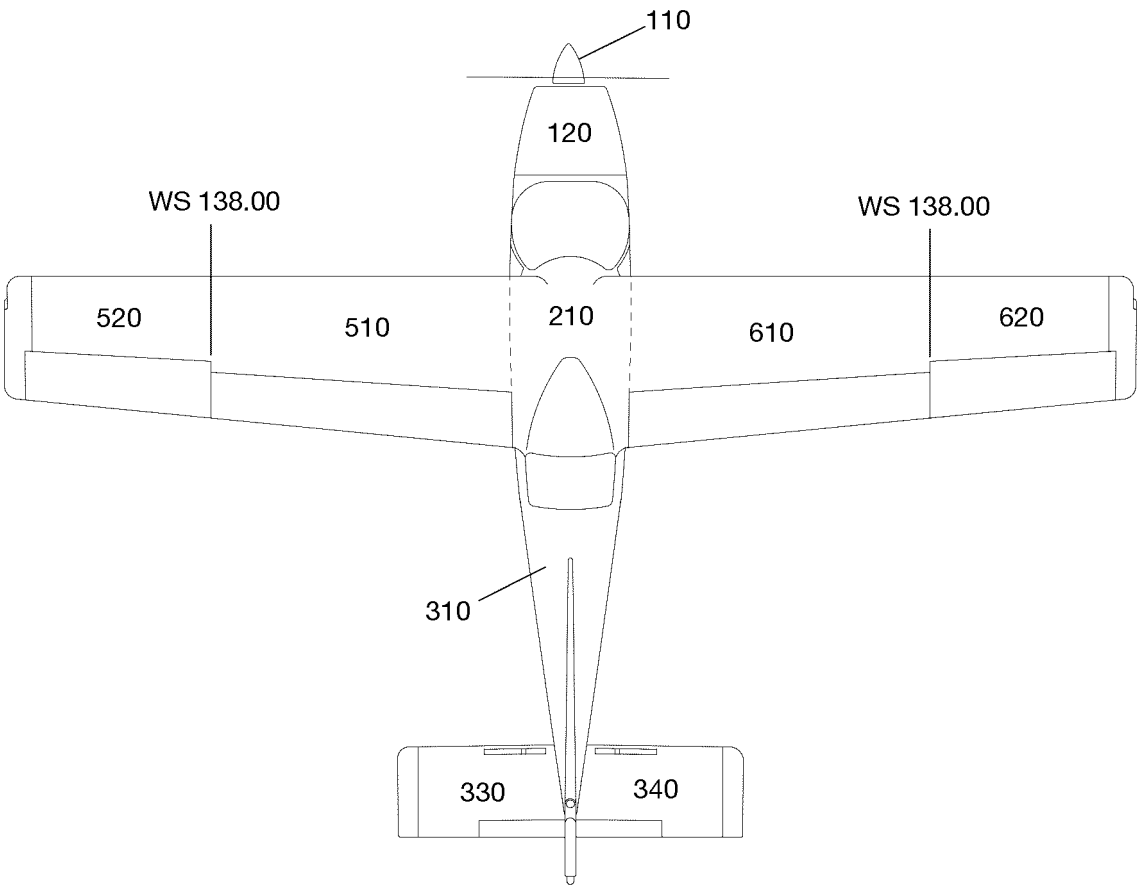
A. Safety-related corrosion conditions transmitted by a Service Bulletin can be mandated by an Airworthiness Directive (AD). Airworthiness Directives can be found on the FAA website: www.faa.gov.

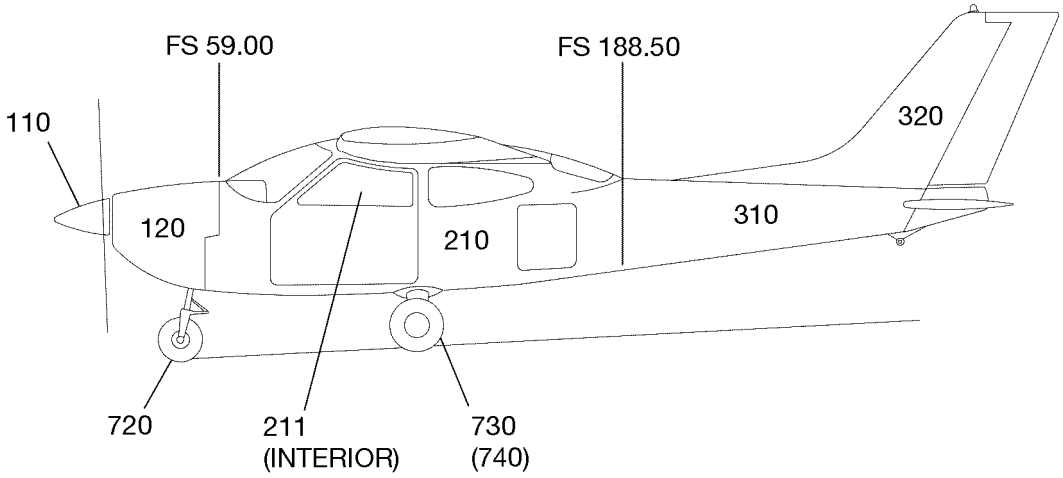
11. Appendix A - Development Of The Baseline Program

A. The Corrosion Prevention and Control Program Baseline Program
   (1) The function of the Corrosion Prevention and Control Program (CPCP) is to give the minimum procedures necessary to prevent and control corrosion so that continued airworthiness is not at risk. The Principal Structural Elements (PSE's) are areas where the CPCP applies.
   (2) The CPCP Baseline Program consists of a Corrosion Program Inspection (CPI) and an inspection time. Each inspection is to be done in an airplane zone.

© Cessna Aircraft Company

A83790





NOTE: THE NUMBER IN THE ( ) INDICATES RIGHT SIDE OF AIRPLANE.

0510T1034

Airplane Zones
Figure 1 (Sheet 1)

© Cessna Aircraft Company

A17357

CORROSION PREVENTION AND CONTROL PROGRAM DAMAGE REPORT FORM

To:
Cessna Aircraft Company
Customer Service
P.O. Box 7706
Wichita, Kansas 67277-7706
Phone Number: (316) 517-5800
Fax Number: (316) 517-7271

From:

Facility _____
Address _____
_____
_____
_____
Phone No. _____

Airplane Serial No._____
Utilization/Year (Hrs)_____
Total Time In Service (Hrs)_____
Registration No._____
Total Landings/Cycles_____
Fax No._____

Corrosion Inspection Number _____
Interval (Years) Since Last Inspection _____

Level Of Corrosion:
☐LEVEL 2
☐LEVEL 3
☐LOCAL
☐WIDESPREAD

DAMAGED PART NAME:
☐LONGERON/STRINGER
☐FRAME
☐BRACKET/SHEAR TIE
☐CHORD
☐WEB
☐OTHER_____
☐ SKIN
☐ DOUBLER
☐ RIB
☐ BULKHEAD
☐ FITTING

LOCATION OF DAMAGE: ZONES _____
STA_____ TO STA_____
WL_____TO WL_____
BL _____TO BL_____

CAUSE OF DAMAGE:
☐ENVIRONMENT
☐CHEMICAL SPILL
☐BLOCKED DRAIN
☐UNKNOWN
☐INTERNAL LEAKAGE
☐LAVATORY SPILL
☐WET INSULATION BLANKET

ADDITIONAL DESCRIPTION OF DAMAGED AREA_____
_____
_____
_____
_____
_____

Corrosion Prevention and Control Program Damage Report Form
Figure 2 (Sheet 1)

© Cessna Aircraft Company

(3) The corrosion reports that are sent to Cessna Aircraft Company and data from the FAA Service Difficulty Records were used to identify the inspection areas of the Baseline Program. When more than one incident of corrosion was identified at a specified location, an inspection was included for that location in the Baseline Program.
(4) When corrosion was found once, the data was examined to find if the corrosion was caused by one specified occurrence or if other airplanes could have corrosion in the same location. If the corrosion is not linked to one specific occurrence, the inspection should be added to the Baseline Program.
(5) The inspection interval was specified by the duration and corrosion severity.

12. Appendix B - Procedures For Recording Inspection Results

A. Record the Inspection Results.
(1) It is not an FAA mandatory procedure to record the CPCP results, but Cessna Aircraft Company recommends that records be kept to assist in program adjustments when necessary. The inspection of records will make sure the identification, repeat inspections and level of corrosion are monitored. The data can identify whether there is more or less corrosion at repeat intervals. The data can also be used to approve increased or decreased inspection intervals.

13. Appendix C - Guidelines

A. Glossary.
(1) The following additional information clarifies the previous sections of this document. Refer to Figure 3.

B. Glossary of General Descriptions.

WORD	GENERAL DESCRIPTION
Allowable Limit	The allowable limit is the maximum amount of material (usually expressed in material thickness) that may be removed or blended out without affecting the ultimate design strength capability of the structural member. Allowable limits may be established by the design approval holder. The FAA (or applicable regulatory authority) may also establish allowable limits. The design approval holder normally publishes allowable limits in the Structural Repair Manual or in Service Bulletins.
Baseline Program	A Baseline Program is a CPCP developed for a specific model airplane. The design approval holder typically develops the Baseline Program. However, it may be developed by a group of operators who intend to use it in developing their individual CPCP. It contains the corrosion program inspection, an implementation threshold and a repeat interval for the procedure accomplishment in each area or zone.
Basic Task	Refer to Corrosion Program Inspection.
Corrosion Program Inspection (CPI)	The Corrosion Program Inspection (CPI) is a specific and fundamental set of work elements that should be performed repetitively in all task areas or zones to successfully control corrosion. The contents of the CPI may vary depending upon the specific requirements in an airplane area or zone. The CPI is developed to protect the primary structure of the airplane.
Corrosion (Metal)	The physical deterioration of metals caused by a reaction to an adverse environment.

© Cessna Aircraft Company

WORD	GENERAL DESCRIPTION
Corrosion Prevention and Control Program (CPCP)	A Corrosion Prevention and Control Program is a comprehensive and systematic approach to controlling corrosion such that the load carrying capability of an airplane structure is not degraded below a level necessary to maintain airworthiness. It contains the corrosion program inspections, a definition of corrosion levels, implementation thresholds, a repeat interval for task accomplishment in each area or zone and specific procedures that apply if corrosion damage exceeds Level 1 in any area or zone.
Design Approval Holder	The design approval holder is either the type certificate holder for the aircraft or the supplemental type certificate holder.
Inspection Area	The inspection area is a region of airplane structure to which one or more CPIs are assigned. The inspection area may also be referred to as a Zone.
Inspection Interval	The inspection interval is the calendar time between the accomplishment of successive corrosion inspection tasks for a Task Area or Zone.
Level 1 Corrosion	Level 1 Corrosion is one or more of the items that follow: 1. Corrosion damage occurring between successive inspections, that is local and can be reworked or blended out within the allowable limit. 2. Local corrosion damage that exceeds the allowable limit but can be attributed to an event not typical of the operator's usage or other airplanes in the same fleet (e.g., mercury spill). 3. Operator experience has demonstrated only light corrosion between each successive corrosion task inspection; the latest corrosion inspection task results in rework or blend out that exceeds the allowable limit.
Level 2 Corrosion	Level 2 corrosion occurs between two successive corrosion inspection tasks that requires a single rework or blend-out that exceeds the allowable limit. A finding of Level 2 corrosion requires repair, reinforcement or complete or partial replacement of the applicable structure.
Level 3 Corrosion **(NOTE 1)**	Level 3 corrosion occurs during the first or subsequent accomplishments of a corrosion inspection task that the operator determines to be an urgent airworthiness concern.
Light Corrosion	Light corrosion is corrosion damage so slight that removal and blendout over multiple repeat intervals (RI) may be accomplished before material loss exceeds the allowable limit.
Local Corrosion	Generally, local corrosion is corrosion of a skin or web (wing, fuselage, empennage or strut) that does not exceed one frame, stringer or stiffener bay. Local corrosion is typically limited to a single frame, chord, stringer or stiffener or the corrosion of more than one frame, chord, stringer or stiffener where no corrosion exists on two adjacent members on each side of the corroded member.
Principal Structural Element (PSE)	A PSE is an element that contributes significantly to carrying flight, ground or pressurization loads and whose integrity is essential in maintaining the overall structural integrity of the airplane.
Task Area	Refer to Inspection Area.

© Cessna Aircraft Company

WORD	GENERAL DESCRIPTION
Urgent Airworthiness Concern	An urgent airworthiness concern is damage that could jeopardize continued safe operation of any airplane. An urgent airworthiness concern typically requires correction before the next flight and expeditious action to inspect the other airplanes in the operator's fleet.
Widespread Corrosion	Widespread corrosion is corrosion of two or more adjacent skin or web bays (a web bay is defined by frame, stringer or stiffener spacing). Or, widespread corrosion is corrosion of two or more adjacent frames, chords, stringers or stiffeners. Or, widespread corrosion is corrosion of a frame, chord, stringer or stiffener and an adjacent skin or web bay.
Zone	Refer to Inspection Area.

NOTE 1: If Level 3 corrosion is determined at an inspection, it should be reported. Any corrosion that is more than the maximum acceptable to the design approval holder or the FAA (or applicable regulatory authority) must be reported in accordance with current regulations. This determination should be conducted jointly with the design approval holder.

14. Corrosion Prevention Materials

A. Approved Corrosion Preventative Compounds.

Table 1. Corrosion Preventative Compounds

Name	Part Number	Manufacturer	Application Areas
Cor-Ban 23 **NOTE 1**	U074098	Cessna Service Parts and Programs. 7121 Southwest Blvd, Wichita, KS 67215	To assist in protecting airplanes from corrosion.
Cor-Ban 35	U074100	Cessna Service Parts and Programs.	To assist in protecting airplanes from corrosion.
ARDROX AV-8 **NOTE 1**	-	Commercially Available	To assist in protecting airplanes from corrosion.
ARDROX AV-15	-	Commercially Available	To assist in protecting airplanes from corrosion.
Corrosion X		Commercially Available	To assist in protecting airplanes from corrosion.
Extreme Simple green or equivalent **NOTE 2**	-	Commercially Available	To be used for cleaning.
MPK (Methyl Propyl Ketone)	-	Commercially Available	To be used for cleaning.

NOTE 1: Use Cor-Ban 23 or ARDOX AV-8 in areas where a high penetration of corrosion inhibiting compound is necessary.

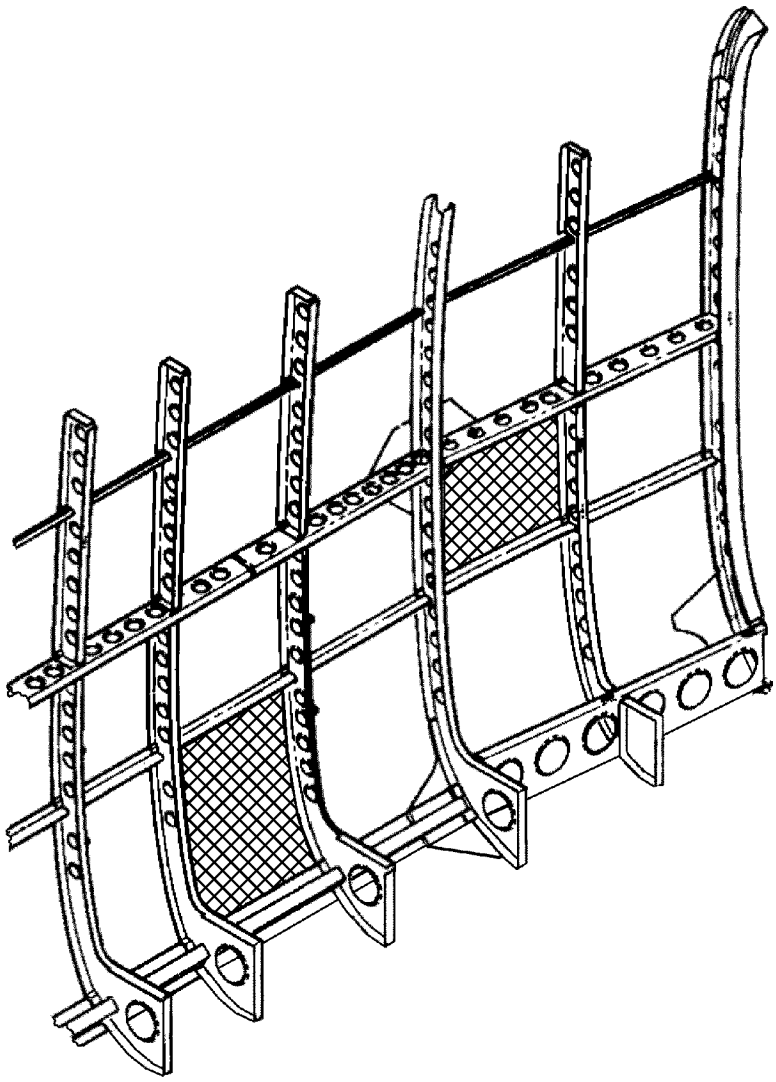
NOTE 2: Do not use any Simple Green products other than Extreme Simple Green, as some have been found to be corrosive to some parts of the airplane structure.

15. Tools and Equipment

NOTE: You can use equivalent alternatives for the items that follow:

© Cessna Aircraft Company

A59703

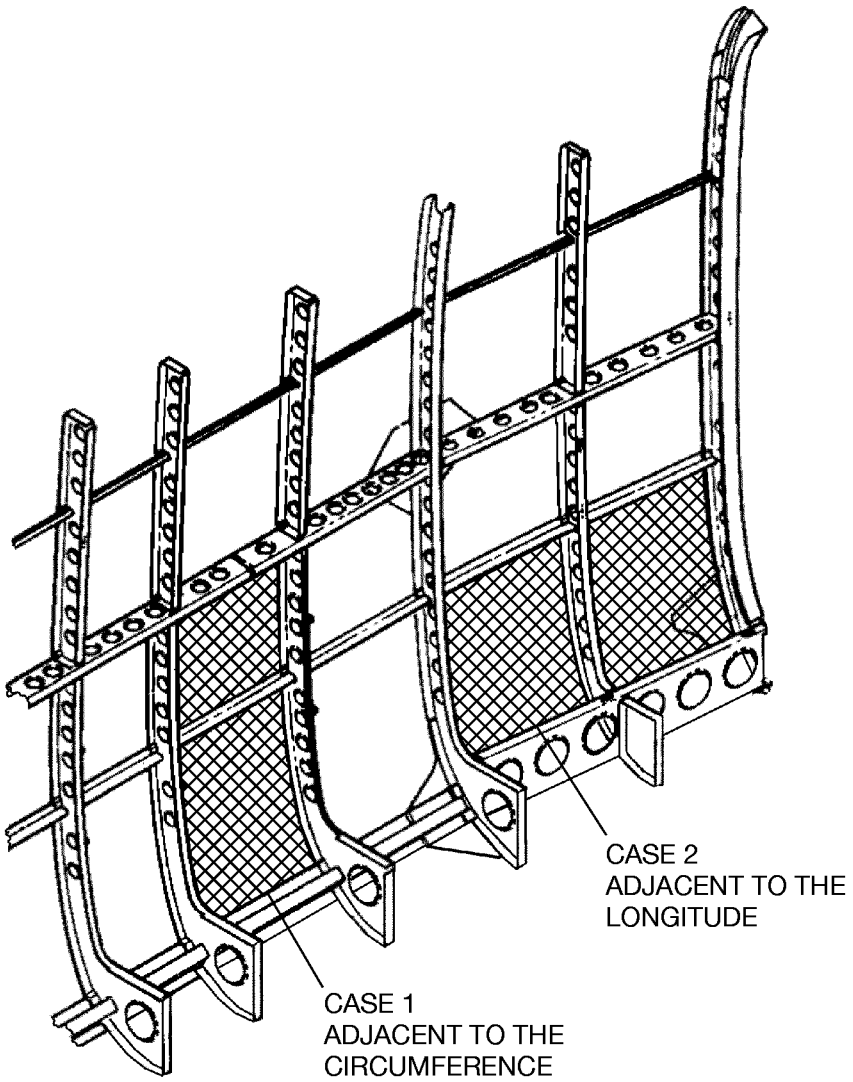


LOCAL CORROSION
(CORROSION FOUND IN NON–ADJACENT AREAS OF THE SKIN PANELS)

Corrosion Location
Figure 3 (Sheet 1)

© Cessna Aircraft Company

A59704

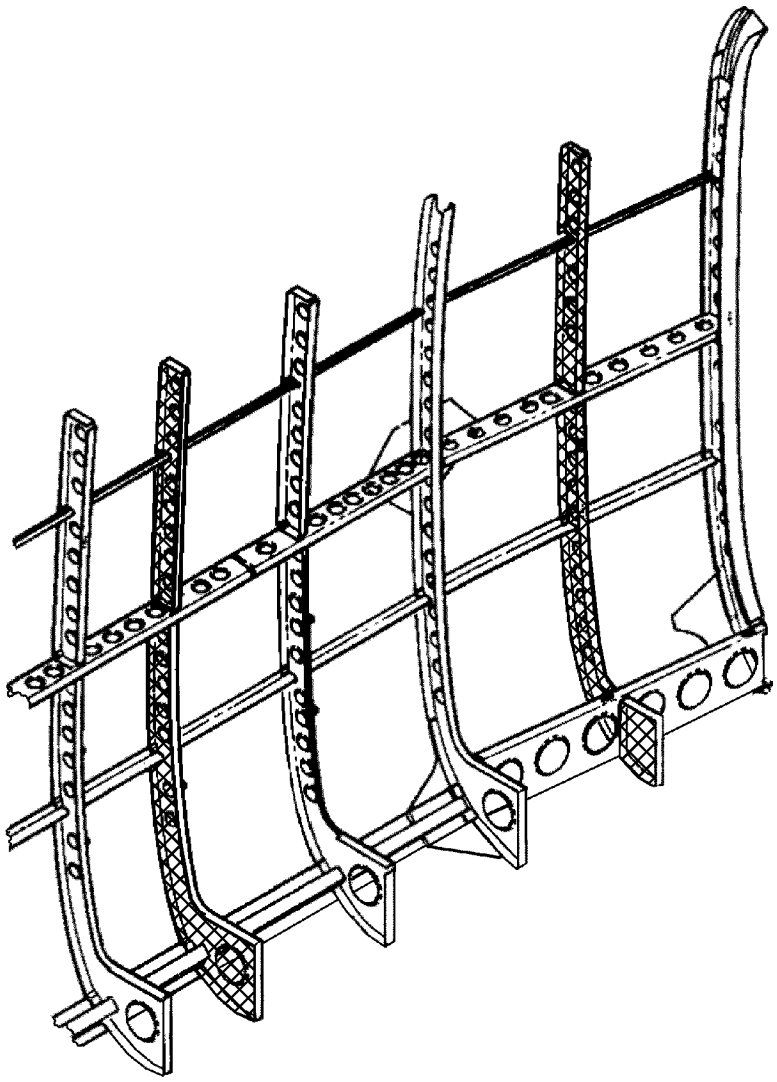


WIDESPREAD CORROSION
(CORROSION FOUND IN ADJACENT AREAS OF THE SKIN PANELS)

Corrosion Location
Figure 3 (Sheet 2)

© Cessna Aircraft Company

A59705

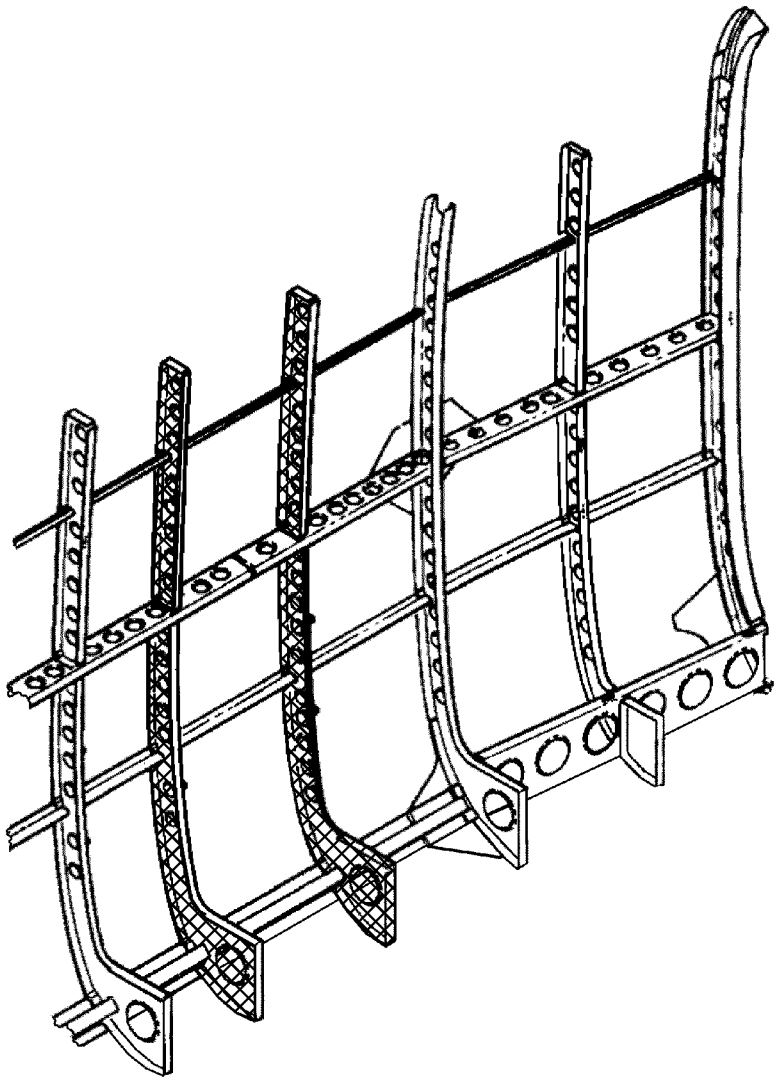


LOCAL CORROSION
(CORROSION FOUND IN NON–ADJACENT FRAMES)

Corrosion Location
Figure 3 (Sheet 3)

© Cessna Aircraft Company

A59706



WIDESPREAD CORROSION
(CORROSION FOUND IN ADJACENT FRAMES)

Corrosion Location
Figure 3 (Sheet 4)

© Cessna Aircraft Company

Table 2. Tools and Equipment

Name	Part Number	Manufacturer	Use
Formit Extension Tube	-	Zip-Chem Products	To spray the corrosion inhibit compound in aerosol form.
HVLP Spray Gun	MF-3100 Microflex	AirVerter., 10630 Riggs Hill Road, Suite S, Jessup, Maryland 20794-9425 Phone: 1.800.937.4857 USA	To spray the corrosion inhibit compound in aerosol form.
Respirator (Half Face)	-	Commercially Available	For respiratory protection
Aluminum Foil	-	Commercially Available	For masking the adjacent parts in the vicinity of corrosion inhibiting compound application area.
Paint Masking Tape	-	Commercially Available	For masking the adjacent parts in the vicinity of corrosion inhibiting compound application area.
Formit-18 Fan	-	Cessna Service Parts and Programs. 7121 Southwest Blvd, Wichita, KS 67215	To be used for spray application
Boroscope	-	Commercially Available	To access the inspection area
Magnifying Glass	-	Commercially Available	To inspect the corrosion area.

16. Corrosion Inspections and Detection Methods

A. Typical Inspection Methods.

(1) Remove all equipment or components that can interfere with your ability to clearly view the inspection area.

NOTE: In some areas it may be necessary to use equipment such as a borescope to see the inspection area.

(2) Fully clean the inspection area before starting the inspection.

(3) Carefully examine the inspection area for any indication of corrosion. Refer to Section 2A-30-01 - Corrosion, for additional information on the common indications that corrosion has occurred.

(a) Special attention should be given to inspection areas that have had corrosion repairs in the past.

(b) Nondestructive testing can be necessary after some disassembly if the inspection shows a bulge in the skin or corrosion below structural splices or fittings.

© Cessna Aircraft Company

CAUTION: Remove only the minimum amount of material to completely remove the corrosion. Removal of too much material can result in additional repairs and rework.

(4) Remove all of the corrosion from the structure or component.

NOTE: A magnifying glass can be a valuable tool to use to make sure all the corrosion has been removed.

17. Corrosion Evaluation and Classification

A. Complete an Initial Corrosion Damage Assessment.
(1) For classification of corrosion damage, refer to Determination of the Corrosion Levels.

B. Measure the Depth of Corrosion Damage.
(1) You can remove a small area of corrosion with a MPK wipe.
(2) Use a dial depth gage or similar tool to measure the depth of the corrosion damage.
(3) If you find that the corrosion exceeds allowable limits during corrosion evaluation, contact Cessna Customer Support for further instructions.

18. Application of Corrosion Preventative Compounds

A. Detection of previously applied compounds.
(1) Visually determine if the corrosion is in an area that has corrosion preventative compounds previously applied. Refer to Section 2A-30-01 - Corrosion, for additional information.

B. Surface/Area Preparation
(1) Cleaning

WARNING: Always use the proper level of Personal Protective Equipment when using cleaning compounds. Personnel Injury or death may occur.

CAUTION: Use Extreme Simple Green or approved equivalent to clean the corrosion inhibiting compound application area.

CAUTION: Prevent the direct contact of cleaner or rinse water spray on wheel bearings or lubrication bearings.

(a) Clean the surfaces where the corrosion inhibiting compound will be applied as follows:
1 Use a handheld sprayer to apply the cleaner.
2 Make sure that the cleaner pressure is less than 100 psi (12065.83 kPa).
3 Apply a full layer of the cleaner to the area where the corrosion inhibiting compound will be applied.
4 Let the cleaner stay on the area for 5-10 minutes.
5 Scrub the area with a soft-bristeled brush (non-metalic).
6 If necessary, apply the cleaner again to keep the surface wet.

NOTE: If the surface dries before the rinse, apply the cleaner again.

7 Rinse the surface with reverse osmosis or de-ionized water.
8 Make sure that the water pressure is less than 100 psi (12065.83 kPa).
9 Let the corrosion area fully dry.

NOTE: Do not apply corrosion inhibiting compound to a wet surface.

© Cessna Aircraft Company

(2) Masking

NOTE: It is not necessary to apply masking tape to aluminium or stainless steel tubes, plastics, sealants, adhesives, placards, and rubber before the corrosion inhibiting compound is applied.

(a) Put paint mask paper or plastic on windows, light ramps, brakes, tires, and adjacent areas of possible over-spray.
(b) Put an aluminum foil or paint masking tape on the following parts or assemblies, if they are in the area where the corrosion inhibiting compound will be applied.
1 Landing Gear Components
2 Actuator Components
3 Movable Mechanical Components
4 Electrical Components (wires, switches and sensors etc.)
5 Seals
6 Bleed Air Lines

C. Methods of Application

WARNING: Always use the proper level of Personal Protective Equipment when you use cleaning compounds. Personnel Injury or death can occur.

NOTE: Refer to the manufacturer's specifications for the proper application temperature.

(1) Use a spray gun if the corrosion inhibiting compound is in a bulk resin form.
(2) If necessary, you can use an extension tube with a spray gun to keep the over-spray to a minimum.
(3) Apply the corrosion inhibiting compound in one full wet layer.

NOTE: The applied area of corrosion inhibiting compound will show as a light yellow or amber color.

(4) If you find a sag or drip mark in the compound, use the MPK (Methyl Propyl Ketone) to clean the sag or drip from the airplane. After you clean the area, apply the corrosion inhibiting compound.
(5) If you use Cor-Ban 23 or ARDROX AV-8 for the corrosion treatment, make sure that the wet layer thickness is between 1 to 2 mils.
(6) If you use Cor-Ban 35 or ARDROX AV-15 for the corrosion treatment, make sure that the wet layer thickness is between 2 to 3 mils.
(7) If you use Corrosion X for the corrosion treatment, make sure that the wet layer thickness is between 2 to 3 mils.
(8) Let the wet layer dry for two to three hours to become tack-free.

NOTE: The airplane must stay in the paint facility until tack-free.

NOTE: The minimum cure temperature must not be below 50° F (10° C).

(9) Remove the masks from around the corrosion inhibiting compound application area.
(10) Visually examine the oleos, actuators, control cables, pulleys, and electrical or mechanical switches for signs of overspray.
(a) If you find signs of over-spray or a penetration of the corrosion inhibiting compound, clean the area with MPK.
(11) Let the applied corrosion inhibiting compound layer cure indoors or outdoors after it become tack-free.
(12) Discard the aerosol extension tube used during the application.

NOTE: Use the extension tube one-time only.

© Cessna Aircraft Company

(13) Discard the used mask materials and remaining corrosion inhibiting compounds.

19. Determination of the Corrosion Levels

A. Find the Corrosion Levels, refer to Figure 4.
(1) Corrosion found on a structure when you use the Corrosion Program and Corrosion Prevention (CPCP) Baseline Program will help find the extent of the corrosion.
(2) The second and subsequent inspections will find how well the CPCP program has been prepared or if there is a need to make adjustments to the Baseline Program.
(3) A good quality CPCP is one that controls corrosion to Level 1 or better.
(4) If Level 2 corrosion is found during the second or subsequent inspection, you must do something to decrease the future corrosion to Level 1 or better.
(5) If Level 3 corrosion is found, you must also do something to decrease the future corrosion to Level 1. Also, a plan to find or prevent Level 3 corrosion in the same area on other airplanes must be added to the CPCP.
(6) All the corrosion that you can repair in the allowable damage limits, (less than 10 percent of the part thickness) is Level 1 corrosion.
(7) If all corrosion is Level 1, the CPCP is correctly prepared.
(8) If you must reinforce or replace the part because of corrosion, the corrosion is Level 2.
(9) If the part is not airworthy because of the corrosion, you must do an analysis to find out if the corrosion is Level 3.
(10) The chart found in this section will help find the level of the corrosion.
(11) The probability that the same problem will occur on another airplane is dependent on several factors such as: past maintenance history, operating environment, years in service, inspectability of the corroded area and the cause of the problem.

20. Level 2 Corrosion Findings

A. All Level 2 corrosion that is more than the rework limits of the approved repair procedures must be reported to Cessna Aircraft Company. Cessna Aircraft Company engineering will do an analysis to make sure the corrosion is not an urgent airworthiness concern.

B. When doing the analysis, Cessna Aircraft Company will consider:
(1) Can the cause of the corrosion be identified, such as a chemical spill or protective finish breakdown?
(2) Has the same level of corrosion been found on other airplanes?
(3) Are the corrosion protection procedures applied during manufacture the same for earlier and later models?
(4) Age of the corroded airplane compared to others checked.
(5) Is the maintenance history different from the other airplanes in the fleet?

21. Typical Actions That Follow the Determination of the Corrosion Level.

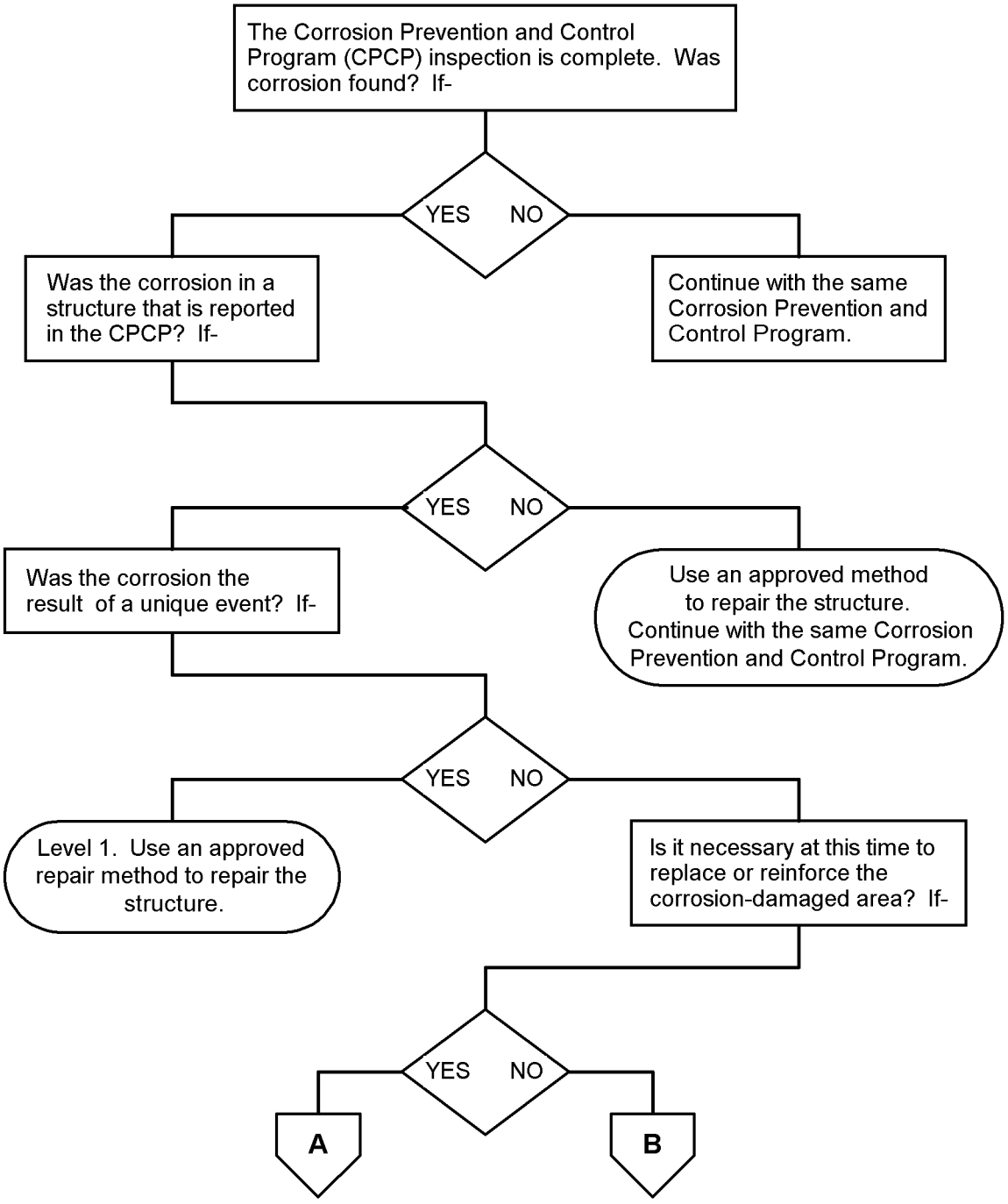
A. If corrosion is found, find the corrosion level, then do the necessary steps for a specific inspection.

B. If Level 1 corrosion is found during the first CPCP inspection.
(1) Repair the structure. Contact Cessna Aircraft Company for an approved repair procedure.
(2) Continue with the Baseline Program.
(a) Optional: Document the results of the inspection for use in validating program compliance.

C. If Level 2 corrosion is found during the first CPCP inspection.
(1) Repair the structure. Contact Cessna Aircraft Company for an approved repair procedure.
(2) Report the details of the corrosion you see to Cessna Aircraft Company and the FAA (or applicable regulatory authority).
(3) Continue to use the Baseline Program but check the corroded area carefully when you do a subsequent CPCP inspection.
(4) It is recommended that you record the results of the inspection to show compliance with the program.

© Cessna Aircraft Company

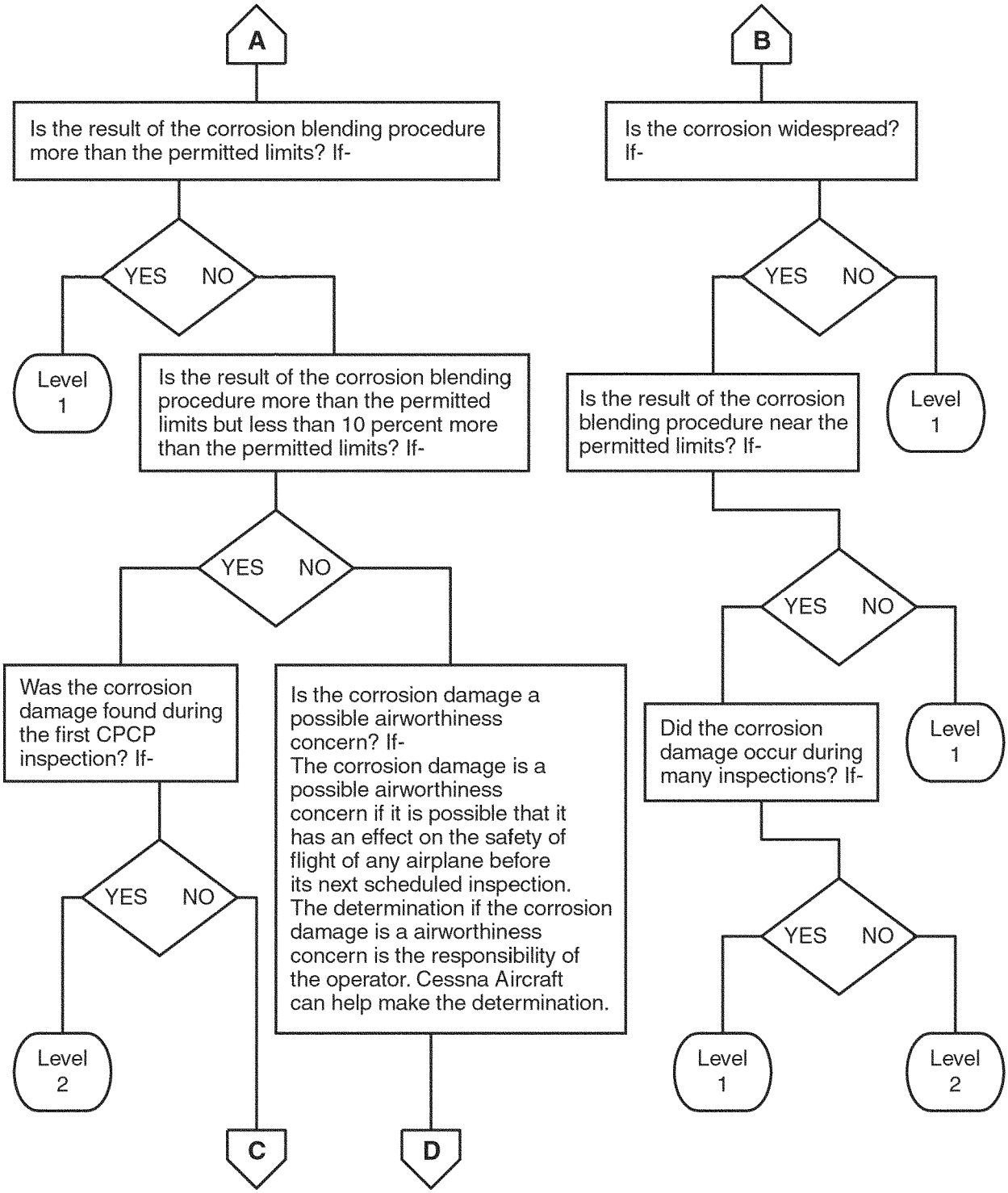
A59709



Corrosion Level Determination Chart
Figure 4 (Sheet 1)

© Cessna Aircraft Company

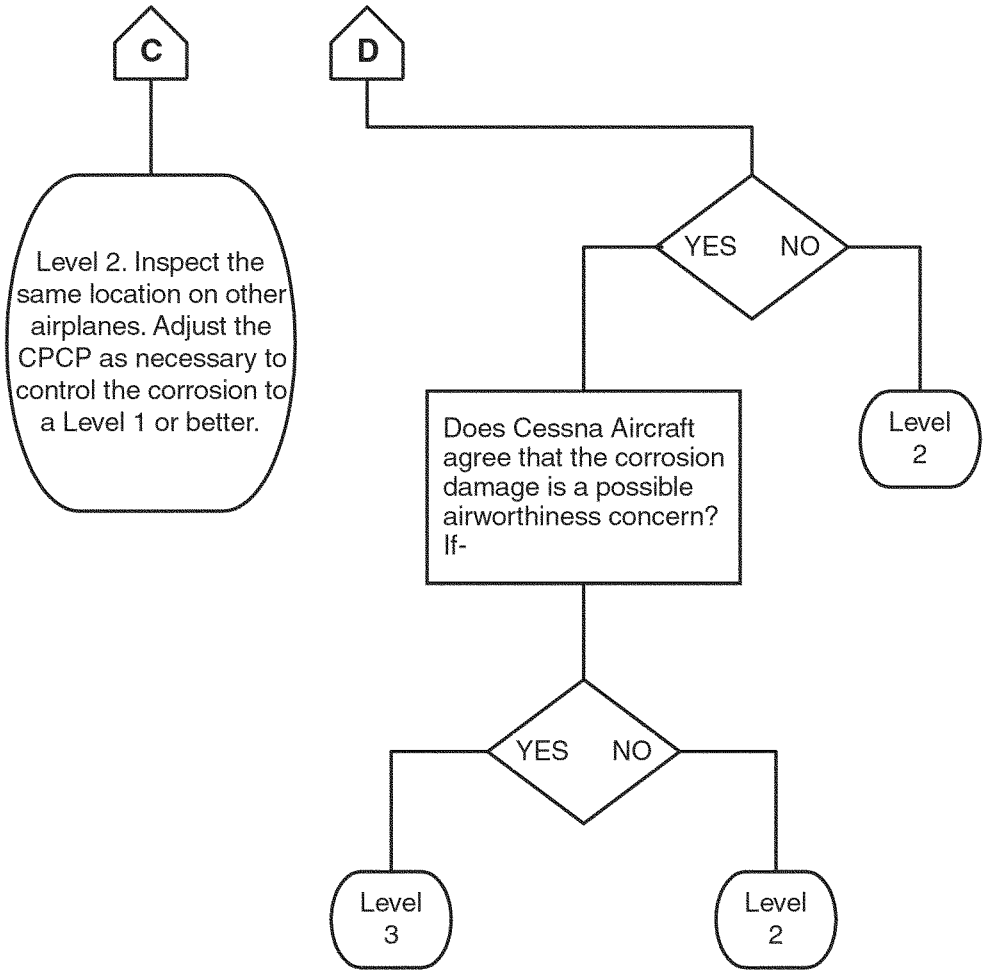
A17383



Corrosion Level Determination Chart
Figure 4 (Sheet 2)

© Cessna Aircraft Company

A18517



Corrosion Level Determination Chart
Figure 4 (Sheet 3)

© Cessna Aircraft Company

D. If Level 3 corrosion is found during the first CPCP inspection.
   (1) Immediately contact Cessna Aircraft Company and the FAA (or applicable regulatory authority) of the corrosion you found. Refer to Reporting System.
   (2) Give sufficient information to make sure that the condition is a possible urgent airworthiness concern for your fleet. Get assistance from Cessna Propeller Aircraft Product Support to develop a plan of action.
   (3) Apply the corrosion program inspection, which includes the repair of the structure. Contact Cessna Aircraft Company for an approved repair procedure.
   (4) Do a report that has the information of the findings. Refer to Corrosion Prevention And Control Program Reporting System - Description And Operation.
   (5) Continue with the Baseline Program and other steps of procedure required by the FAA (or applicable regulatory authority). Examine this area carefully during future inspections.

E. If no corrosion is found during the second or subsequent CPCP inspection:
   (1) Continue with the current Corrosion Prevention and Control Program. No adjustment of the current program is required.
   (2) It is recommended that you record the results of the inspection for a possible increase of the corrosion inspection interval.

F. If Level 1 corrosion is found on the second or subsequent CPCP inspection:
   (1) Do the corrosion program inspection, which includes the repair of the structure. Contact Cessna Aircraft Company for an approved repair procedure.
   (2) Continue with the Baseline Program.
   (3) No adjustment of the existing program is required.
   (4) It is recommended that you record the corrosion inspection number and the results of the inspection to show that the program was complied with.

G. If Level 2 corrosion is found on the second or subsequent CPCP inspection:
   (1) Repair the structure. Contact Cessna Aircraft Company for an approved repair procedure.
   (2) Do a report that shows the information about the corrosion and send it to Cessna Aircraft Company and the FAA (or applicable regulatory authority).
   (3) If corrosion damage required the removal of material just beyond the allowable limits (within 10 percent), complete a check of the other airplanes in the fleet before you change your aircraft's maintenance program.
      (a) If the corrosion is typical of Level 2, use the fleet data to find what changes are required to control corrosion to Level 1 or better.
      (b) If fleet damage is typically Level 1, examine the corroded area during subsequent inspections on all affected airplanes.
      (c) Make changes to your aircraft's maintenance program if the typical corrosion becomes Level 2.
   (4) Further evaluation by Cessna Aircraft Company is recommended for Level 2 corrosion findings that are well beyond the allowable limits and there is an airworthiness concern in which prompt action is required.

      NOTE: The airworthiness concern is because of the possibility to have similar but more severe corrosion on any other airplane in the operator's fleet prior to the next scheduled inspection of that area.

   (5) Find the action required to control the corrosion to a Level 1 or better, between future successive inspections. These can include the items that follow:
      (a) A structural modification, such as additional drainage.
      (b) Improvements to the corrosion prevention and control inspections, such as more care and attention to corrosion removal, reapplication of protective finish, drainage path clearance.
      (c) Decrease the inspection interval for additional airplanes that go into the program.
   (6) Send a plan of corrective action to the FAA (or applicable regulatory authority) for approval and to Cessna Aircraft Company as needed.
   (7) Use the approved plan of action.

© Cessna Aircraft Company

H. If Level 3 corrosion is found on the second or subsequent CPCP inspection:
   (1) Contact Cessna Aircraft Company and the FAA (or applicable regulatory authority) about the corrosion that was found.
   (2) Send a plan to examine the same area on other affected airplanes in the operator's fleet.
   (3) Apply the corrosion program inspection, which includes the repair of the structure. Contact Cessna Aircraft Company for an approved repair procedure.

I. Find the action needed to control the corrosion finding to Level 1 or better, between future successive inspections. These can include any or all of the following:
   (1) A structural modification, such as additional drainage.
   (2) Improvements to the corrosion prevention and control inspections, such as more care and attention to corrosion removal, reapplication of protective finish, drainage path clearance.
   (3) A decrease in the inspection interval for additional airplanes entering the program.

J. Send a plan of corrective action to the FAA (or applicable regulator authority) for approval and Cessna Aircraft Company as needed.

K. Use the approved plan of action.

L. It is recommended that you give the details of the findings to Cessna Aircraft Company.

22. Factors Influencing Corrosion Occurrences

A. If you find Level 2 or Level 3 corrosion, when you think about how to change your CPCP, think about the list that follows.
   (1) Is there a presence of LPS-3 Heavy-Duty Rust Inhibitor?
   (2) Is there a presence or condition of protective finish?
   (3) What was the length of time since the last inspection and/or application of corrosion inhibiting compound?
   (4) Was there inadequate clean-up/removal of corrosion prior to application of corrosion inhibiting compound, during previous maintenance of the area?
   (5) Are the moisture drains blocked or is there inadequate drainage?
   (6) What was the environment, the time of exposure to the environment and the use of the airplane?
   (7) Was there a variation in past maintenance history and or use of the airplanes in the operator's fleet?
   (8) Were there variations in the production build standard in the operator's fleet?

23. Reporting

A. The minimum requirements to prevent or control the corrosion in the Corrosion Prevention and Control Program (CPCP) were made on the best information, knowledge and experience available at the time. As this experience and knowledge increases, the CPCP's intervals will be changed as necessary. Refer to CPCP Damage Report Form (Figure 2 in Section 2A-30-00).
   (1) You must contact the Cessna Aircraft Company about all Level 2 or 3 corrosion of the structure that is on the list in the Baseline Program that is found during the second and subsequent corrosion program inspections. Refer to Reporting System.

      NOTE: You do not have to contact the Cessna Aircraft Company about corrosion that is found on structure that is not on the list in the Baseline Program, for example the secondary structure.

24. Program Implementation

A. When a CPCP is started it is important to do the items that follow:
   (1) Start inspections at the recommended interval following the completion of the first SID inspection.
   (2) Once the corrosion program inspection (CPI) is started, repeat the subsequent applications of the CPI at the recommended interval for each CPI.
   (3) You can start a CPCP on the basis of individual CPIs or groups of CPIs.
   (4) Cessna Aircraft Company highly recommends to start all of the CPIs as soon as possible. This is the most cost effective way to prevent or control corrosion.

© Cessna Aircraft Company

CORROSION

1. General

A. This section describes corrosion to assist maintenance personnel in identification of various types of corrosion and application of preventative measures to minimize corrosion activity.

B. Corrosion is the deterioration of a metal by reaction to its environment. Corrosion occurs because most metals have a tendency to return to their natural state.

2. Corrosion Characteristics

A. Metals corrode by direct chemical or electrochemical (galvanic) reaction to their environment. The following describes electrochemical reaction:
   (1) Electrochemical corrosion can best be compared to a battery cell. Three conditions must exist before electrochemical corrosion can occur:
      (a) There must be a metal that corrodes and acts as the anode (+ positive).
      (b) There must be a less corrodible metal that acts as the cathode (- negative).
      (c) There must be a continuous liquid path between the two metals, which acts as the electrolyte. This liquid path may be condensation or, in some cases, only the humidity in the air.
   (2) Elimination of any one of the three conditions will stop the corrosion reaction process.
   (3) A simple method of minimizing corrosion is adding a layer of pure Aluminum to the surface. The pure Aluminum is less susceptible to corrosion, and also has a very low electropotential voltage relative to the remainder of the alloyed sheet. This process is conducted at the fabricating mill and the product is called Alclad. Model 177 airplanes had sheet metal parts constructed of Alclad sheet.
   (4) One of the best ways to eliminate one of the conditions is to apply an organic film (such as paint, grease, or plastic) to the surface of the metal affected. This will prevent electrolyte from connecting the cathode to the anode so current cannot flow, and therefore, prevent corrosive reaction, and was not available for production Model 177 airplanes.
   (5) Other means employed to prevent electrochemical corrosion include anodizing and electroplating. Anodizing and other passivating treatments produce a tightly adhering chemical film which is much less electrochemically reactive than the base metal. Because the electrolyte cannot reach the base metal, corrosion is prevented. Electroplating deposits a metal layer on the surface of the base material, which is either less electrochemically reactive (Example: chrome on steel) or is more compatible with the metal to which it is coupled (Example: cadmium plated steel fasteners used in aluminum).
   (6) At normal atmospheric temperatures, metals do not corrode appreciably without moisture. However, the moisture in the air is usually enough to start corrosive action.
   (7) The initial rate of corrosion is usually much greater than the rate after a short period of time. This slowing down occurs because of the oxide film that forms on the metal surfaces. This film tends to protect the metal underneath.
   (8) When components and systems constructed of many different types of metals must perform under various climatic conditions, corrosion becomes a complex problem. The presence of salts on metal surfaces (sea or coastal operations) greatly increases the electrical conductivity of any moisture present and accelerates corrosion.
   (9) Other environmental conditions that contribute to corrosion are:
      (a) Moisture collecting on dirt particles.
      (b) Moisture collecting in crevices between lap joints, around rivets, bolts, and screws.

3. Types of Corrosion

A. The common types of corrosion that are encountered in airplane maintenance are described in this section. In many instances more than one form of corrosion may exist at the same time. While this makes it difficult to determine the exact type of corrosion, it should still be possible to determine that a corrosive process is taking place. If it is impractical to replace an assembly or component, contact an authorized repair shop.

© Cessna Aircraft Company

B. Direct Chemical Attack.
   (1) Direct chemical attack may take place when corrosive chemicals, such as battery electrolyte, caustic cleaning solutions or residual flux deposits are allowed to remain on the surface or become entrapped in cracks or joints. Welding or soldering flux residues are hydroscopic and will tend to cause severe pitting. Any potentially corrosive substance should be carefully and completely removed whenever such spillage occurs.

C. Pitting Corrosion.
   (1) The most common effect of corrosion on polished aluminum parts is called pitting. It is first noticeable as a white or gray powdery deposit, similar to dust, which blotches the surface (Refer to Figure 1).
   (2) When the deposit is cleaned away, tiny pits can be seen in the surface. Pitting may also occur in other types of metal alloys.

D. Intergranular Corrosion.
   (1) Intergranular corrosion (Refer to Figure 1) takes place because of the nature of the structure of metal alloys. As metals cool from the molten state, a granular structure is formed. The size and composition of the grains and the material in the grain boundaries depend on several factors including the type of alloy and rate of cooling from the molten state or cooling after heat-treating. The grains differ chemically and may differ electrochemically from the boundary material. If an electrolyte comes in contact with this type of structure, the grains and boundary material will act as anode and cathode and undergo galvanic corrosion. The corrosion proceeds rapidly along the grain boundaries and destroys the solidity of the metal.

E. Exfoliation gives the appearance of sheets of very thin metal separated by corrosion products. It is a form of intergranular corrosion. Since the corroded products are thicker than the uncorroded aluminum, exfoliation shows itself by “lifting up” the surface grains of a metal by the force of expanding corrosion. This type of corrosion is most often seen on extruded sections, where the grain thicknesses are usually less than in rolled alloy form.

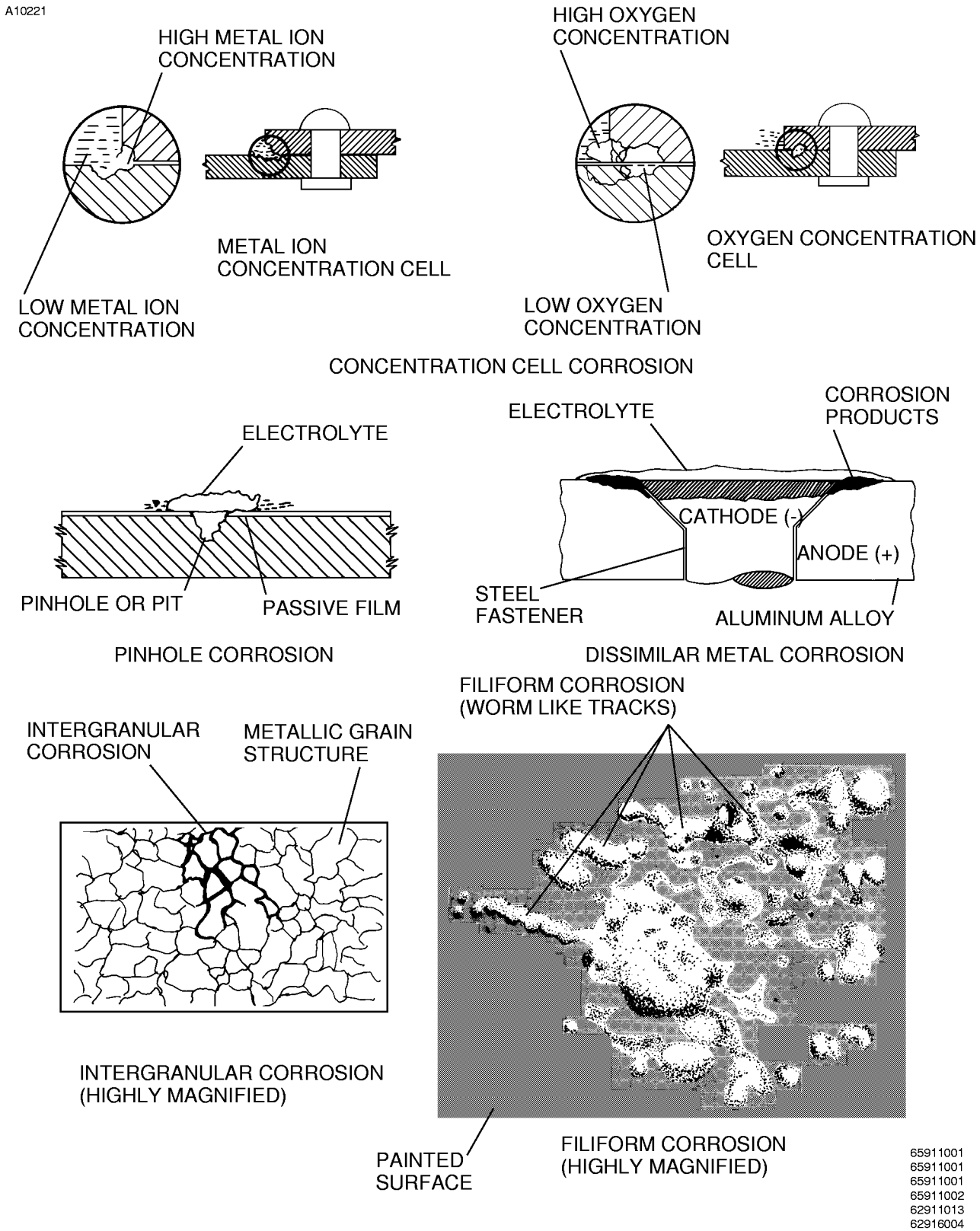
F. Dissimilar Metal Corrosion. (Refer to Figure 1)
   (1) Dissimilar metal corrosion occurs when dissimilar metals are in contact in the presence of an electrolyte. A common example of dissimilar metal contact involves the attachment of aluminum parts by steel fasteners.

G. Concentration Cell Corrosion. (Refer to Figure 1)
   (1) Concentration cell corrosion occurs when two or more areas of the same metal surface are in contact with different concentrations of the same solution, such as moist air, water, and chemicals.
   (2) The general types of concentration cell corrosion are identified as metal ion cells and oxygen cells. Refer to Figure 1.

H. Filiform Corrosion.
   (1) Filiform corrosion is a “concentration cell” corrosion process. When a break in the protective coating over aluminum occurs, the oxygen concentration at the back or bottom of the corrosion cell is lower than that at its open surface. The oxygen concentration gradient thus established, causes an electric current flow, and corrosion results. Filiform corrosion results when this happens along the interface between the metal and the protective coating and appears as small worm-like tracks. Filiform corrosion generally starts around fasteners, holes, and countersinks and at the edge of sheet metal on the outer surface of the airplane. Filiform corrosion is more prevalent in areas with a warm, damp, and salty environment.
   (2) To help prevent filiform corrosion development, the airplane should be:
      (a) Spray washed at least every two to three weeks (especially in a warm, damp environment).
      (b) Waxed with a good grade of water repellent wax to help keep water from accumulating in skin joints and around countersinks.

      NOTE: Wax only clean surfaces. Wax applied over salt deposits will almost guarantee a trapped salt deposit, which is capable of accumulating moisture and developing into filiform corrosion.

© Cessna Aircraft Company



Corrosion
Figure 1 (Sheet 1)

© Cessna Aircraft Company

(c) Keep the airplane hangared to protect it from the atmosphere.
(d) Fly the airplane to promote aeration of enclosed parts.
(e) Ensure all vent/drain holes are open to ventilate the interior of airplane.

(3) To remove filiform corrosion once it has been discovered:
(a) Remove paint from corroded area.
(b) Remove corrosion by sanding area to metal surface, using either a ScotchBrite pad or 320 grit sandpaper (aluminum oxide or silicone carbide grit).
(c) Clean and refinish surface.

I. Stress Corrosion Cracking.
(1) This corrosion is caused by the simultaneous effects of tensile stress and corrosion. The stress may be internal or applied. Internal stresses are produced by nonuniform shaping during cold working of the metal, press and shrink fitting general hardware, and those induced when pieces, such as rivets and bolts, are formed. The amount of stress varies from point to point within the component. Stress corrosion is most likely to occur at points of highest stress, which are also subject to corrosion influence.

J. Fatigue Corrosion.
(1) Fatigue corrosion is a special case of stress corrosion caused by the combined effects of cyclic stress and corrosion.

4. Typical Corrosion Areas

A. Aluminum appears high in the electrochemical series of elements and its position indicates that it should corrode very easily. However, the formation of a tightly adhering oxide film offers increased resistance under mild corrosive conditions. Most metals in contact with aluminum form couples, which undergo galvanic corrosion attack. The alloys of aluminum are subject to pitting, intergranular corrosion, and intergranular stress corrosion cracking.

B. Battery Electrolyte.
(1) Battery electrolyte used in lead acid batteries is composed of 35% sulfuric acid and 65% water. When electrolyte is spilled, it should be cleaned up immediately. A weak boric acid solution may be applied to the spillage area followed by a thorough flushing with clean, cold running water. If boric acid is not available, flush the area with clean, cold water.
(2) If corrosion appears, use an approved repair method to repair the structure.

C. Steel Control Cable.
(1) Checking for corrosion on a control cable is normally accomplished during the preventative maintenance check. During preventative maintenance, broken wire and wear of the control cable are also checked.
(2) If the surface of the cable is corroded, carefully force the cable open by reverse twisting and visually inspect the interior. Corrosion on the interior strands of the cable constitutes failure and the cable must be replaced. If no internal corrosion is detected, remove loose external rust and corrosion with a clean; dry, coarse weave rag, or fiber brush.

CAUTION: Do not use metallic wools or solvents to clean installed cables. Metallic wools will embed dissimilar metal particles in the cables and create further corrosion. Solvents will remove internal cable lubricant, allowing cable strands to abrade and further corrode.

(3) After thorough cleaning of exterior cable surfaces, if the cable appears dry, the lubrication originally supplied on the cable has probably oxidized and needs to be replaced with a light oil (5w motor oil, "3 in 1" oil, LPS-2, WD-40 or Diesel Fuel). Apply the oil with a cloth and then rub the cable with the cloth to coat the cable with a thin layer of oil. Excessive oil will collect dust and be as damaging to the cable as no lubrication.

D. Piano Type Hinges.
(1) The construction of piano type hinges forms moisture traps as well as the dissimilar metal couple between the steel hinge pin and the aluminum hinge. Solid film lubricants are often applied to reduce corrosion problems.

© Cessna Aircraft Company

(2) Care and replacement of solid film lubricants require special techniques peculiar to the particular solid film being used. Good solid film lubricants are lubricants conforming to Specification MIL-PRF-81322.
   (a) Solid film lubricants prevent galvanic coupling on close tolerance fittings and reduce fretting corrosion. Surface preparation is extremely important to the service or wear life of solid film lubricants.
   (b) Solid film lubricants are usually applied over surfaces coated with other films, such as anodize and phosphate. They have been successfully applied over organic coatings such as epoxy primers.

CAUTION: Solid film lubricants containing graphite, either alone or in mixture with any other lubricants, should not be used since graphite is cathodic to most metals and will cause galvanic corrosion in the presence of electrolytes.

E. Requirements peculiar to faying surfaces of airframes, airframe parts, and attaching surfaces of equipment, accessories, and components.
   (1) When repairs are made on equipment or when accessories and components are installed, the attaching surfaces of these items should be protected. The following requirements are peculiar to faying surfaces on airframes, airframe parts, and attaching surfaces of equipment, accessories and components:
   (2) Surfaces of similar or dissimilar metals.
      (a) All faying surfaces, seams, and lap joints protected by sealant must have the entire faying surface coated with sealant. Excess material squeezed out should be removed so that a fillet seal remains. Joint areas, which could hold water, should be filled or coated with sealant.
   (3) Attaching Parts.
      (a) Attaching parts, such as nuts, bushings, spacers, washers, screws, self-tapping screws, self-locking nuts, and clamps, do not need to be painted in detail except when dissimilar metals or wood contact are involved in the materials being joined. Such parts should receive a wet or dry coat of primer.

NOTE: Corrosion inhibiting solid film lubricants, Specification MIL-PRF-46010 and/or MIL-L-46147, may be used to protect attaching parts from corrosion.

      (b) All holes drilled or reworked in aluminum alloys to receive bolts, bushings, screws, rivets, and studs should be treated before installation of fasteners or bushings.
      (c) All rivets used to assemble dissimilar metals should be installed wet, with sealant, conforming to Specification MIL-PRF-81733 Corrosion inhibiting sealer (Type X).
   (4) Close tolerance bolts passing through dissimilar metals should be coated before installation, with a corrosion inhibiting solid film lubricant conforming to Specification MIL-PRF-46010 and/or MIL-L-46147.
   (5) Washers made of aluminum alloy of suitable design should be used under machine screws, countersunk fasteners, bolt heads, and nuts.
   (6) Adjustable parts threads such as tie rod ends, turnbuckles, etc., should be protected with solid film lubrication conforming to Specification MIL-PRF-46010 and/or MIL-L-46147.
   (7) Slip fits should be assembled using wet primer conforming to Specification MIL-PRF-23377G or later, non-drying zinc chromate paste, or solid film lubricant conforming to Specification MIL-PRF-46010 and/or MIL-L-46147.
   (8) Press fits should be accomplished with oil containing material conforming to Specification MIL-C-11796, Class 3, and/or MIL-C-16173, Class 1, or with other suitable material that will not induce corrosion.

F. Electrical.
   (1) Bonding and ground connections should be as described by the installation procedure.
   (2) Potting compounds are used to safeguard against moisture. Corrosion in electrical systems and resultant failure can often be attributed to moisture and climatic condition.

© Cessna Aircraft Company

(3) Corrosion of metal can be accelerated because of the moisture absorbed by fungi. Fungi can create serious problems since it can act as an electrolyte, destroying the resistance of electrical insulating surfaces. Specification ASTM D3955 or ASTM D295-58 outlines moisture and fungus resistant varnish to be used.

5. General Corrosion Repair

A. This section provides general guidance on the repair of corroded area. The procedure presented is:
(1) Gain access to the entire corroded area.
(2) Mechanically remove the corrosion products
(3) Determine the extent of the corrosion damage
(4) Repair or replace the damaged components
(5) Finish the new or repaired parts.
(6) Replace removed components

B. Gain access to the entire corroded area.
(1) Corrosion products typically retain moisture. If those products are not removed, corrosion will continue. Corrosion can take place within layered construction, or under (behind) equipment fastened in place.

C. Mechanically remove the corrosion.
(1) Chemicals will not remove corrosion. The best chemicals can do is interrupt the corrosion cell by either displacing water, or shielding corrosion products from oxygen. In either case, the effect is temporary and will need to be renewed.
(2) Sand mild corrosion.
(3) Use rotary files or sanding disks for heavier corrosion. Finish up with fine sand paper.

NOTE: Do not use metallic wool. Metal particles will be embedded in the surface, which will initiate additional corrosion.

D. Determine the extent of corrosion damage.
(1) Direct measurement is simplest.
(2) Indirect measurement may be necessary
(a) Eddy Current or ultrasound tools can be used for thickness measurement away from part edges.

E. Repair or replace corrosion damaged components
(1) Replace damaged or corroded steel or aluminum fasteners.
(2) If the material is sheet or plate, the thickness is allowed to be as little as 90% of the nominal thickness.
(3) This general allowance is not allowed if:
(a) The area of the part contains fasteners.
(b) The reduced thickness compromises the fit or function of a part.

F. Finish the new or repaired parts
(1) Apply Alodine or similar anticorrosion compounds to new or repaired parts, or
(2) Apply zinc chromate, or
(3) Apply epoxy fuel tank primer.
(4) Paint the exterior or visible interior parts according to Section 18 of the Model 177RG Service Manual.

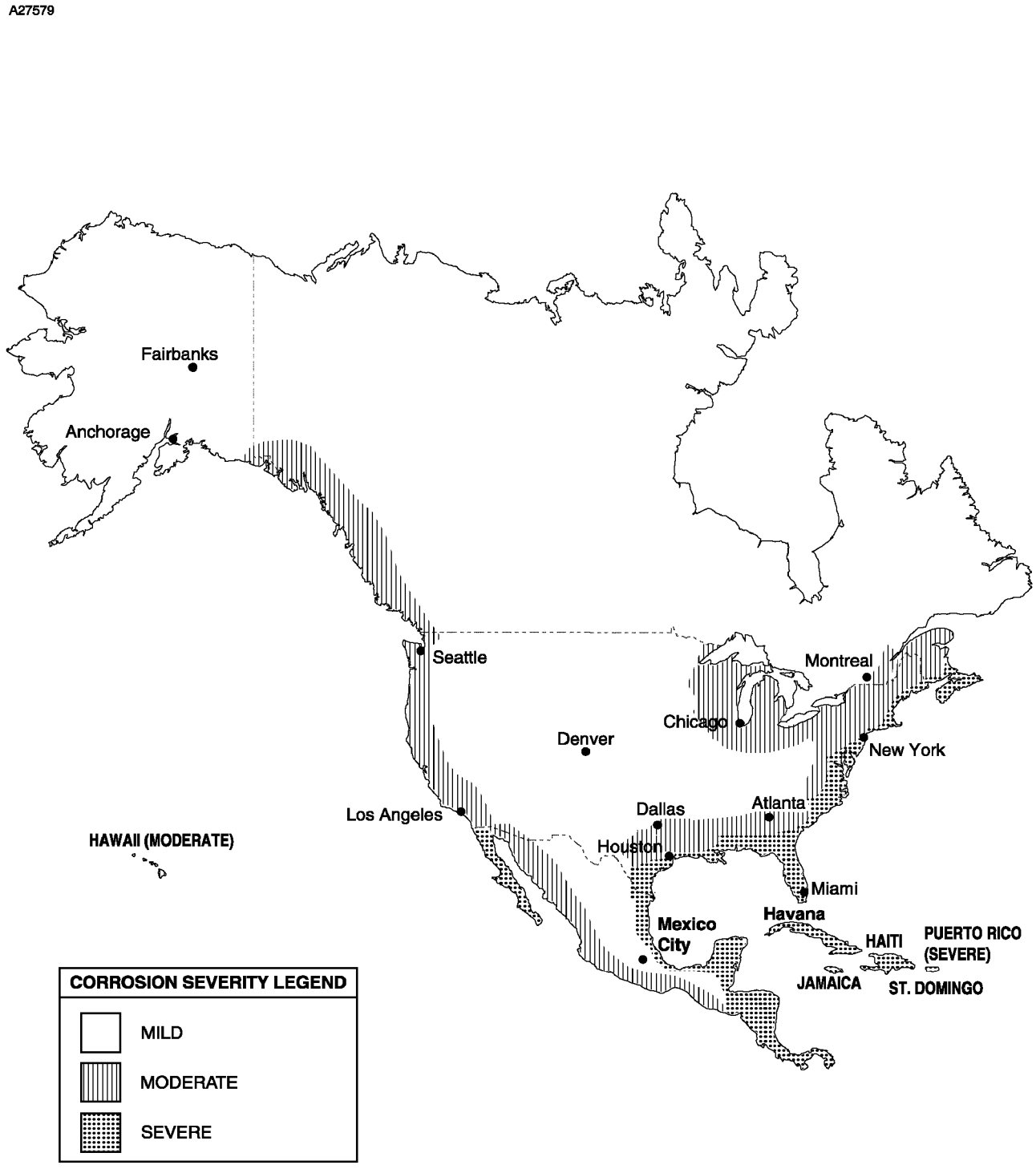
G. Replace Removed Components.

6. General

A. This section contains maps which define the severity of potential corrosion on airplane structure.

B. Corrosion severity zones are affected by atmospheric and other climatic factors. The maps provided in this section are for guidance when determining types and frequency of required inspections and other maintenance. Refer to Figure 2, Figure 3, Figure 4, Figure 5, Figure 6, and Figure 7.

© Cessna Aircraft Company

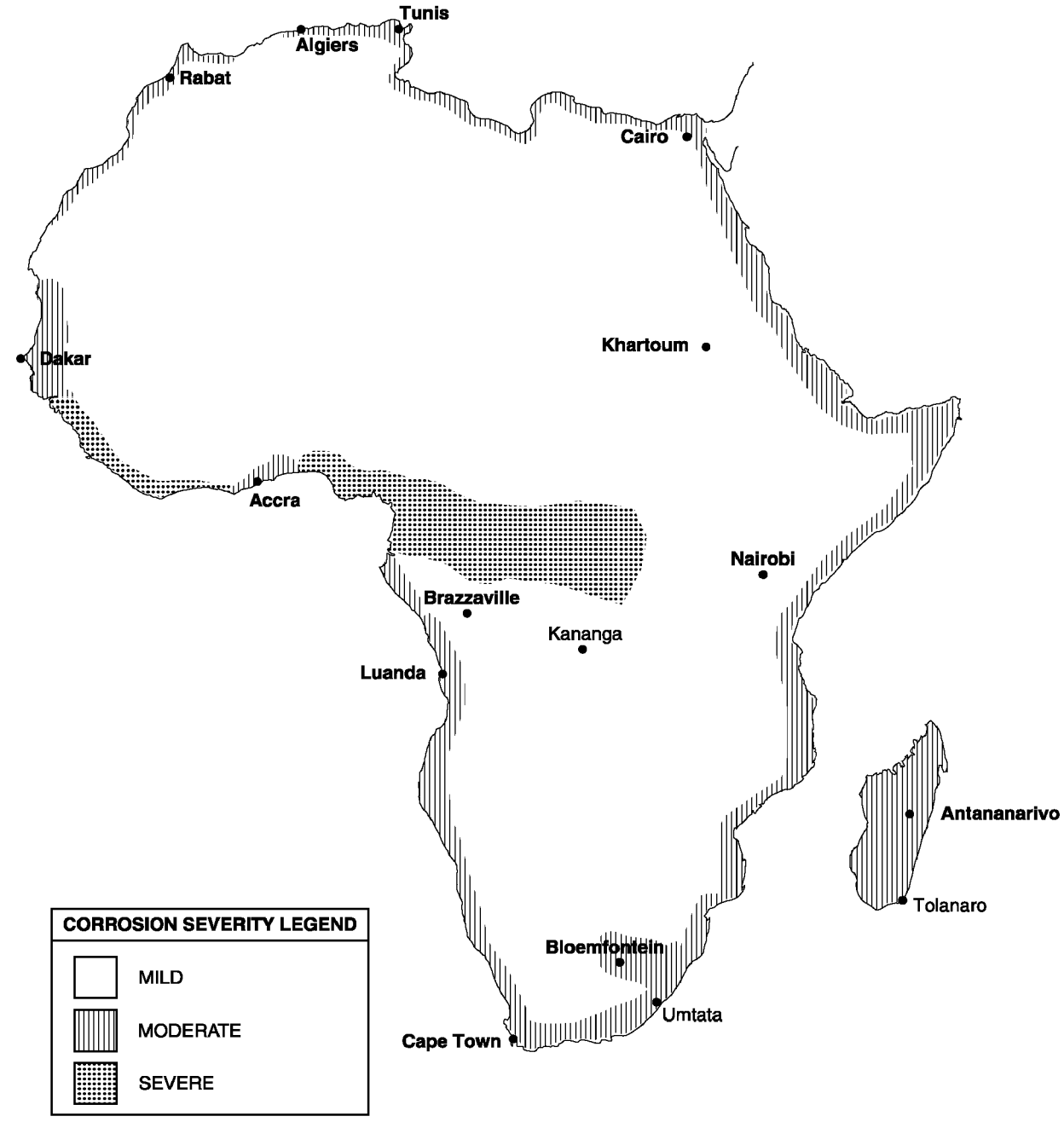


North America Corrosion Severity Map
Figure 2 (Sheet 1)

© Cessna Aircraft Company

South America Corrosion Severity Map
Figure 3 (Sheet 1)

© Cessna Aircraft Company



Africa Corrosion Severity Map
Figure 4 (Sheet 1)

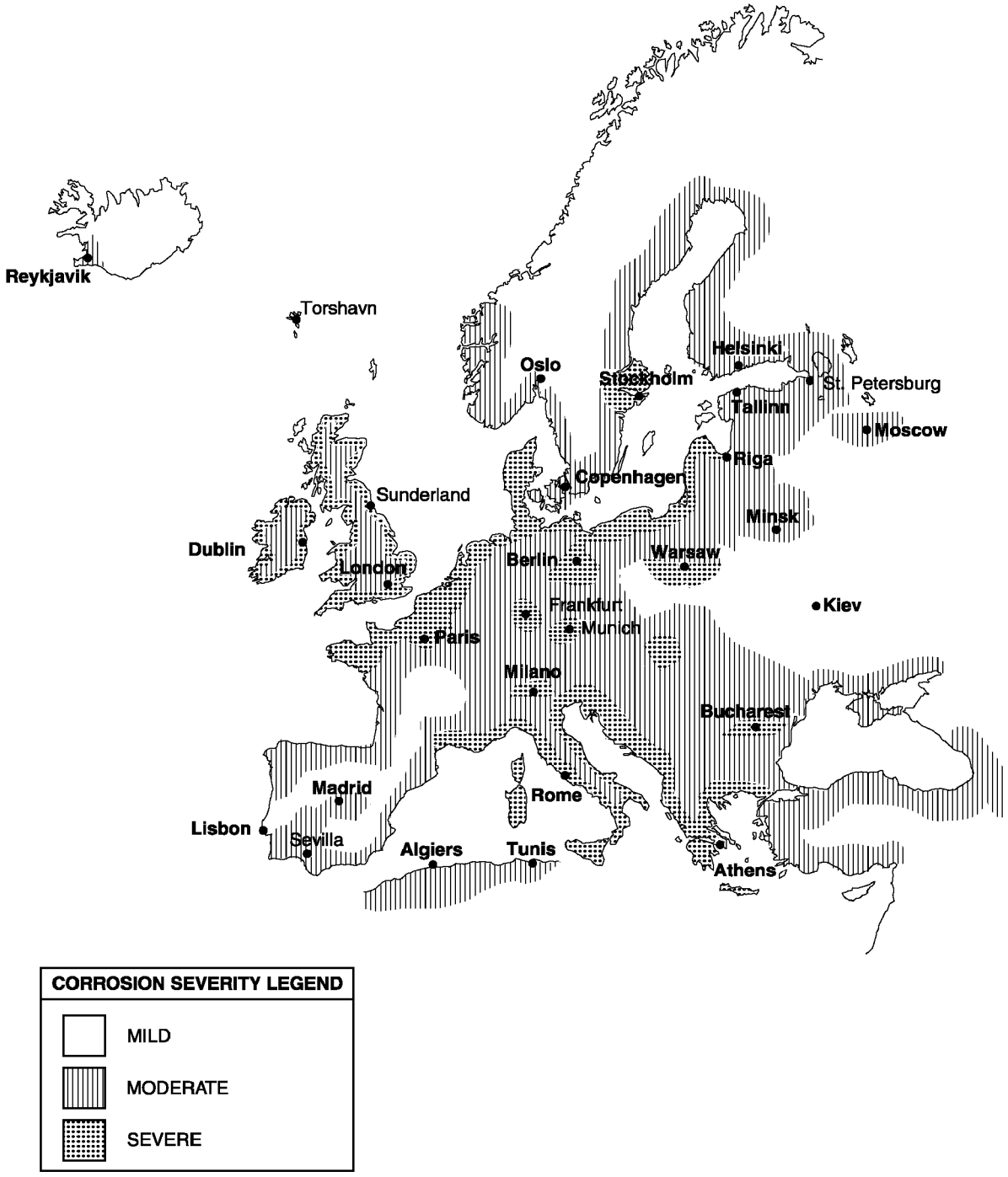
© Cessna Aircraft Company

A27661

Asia Corrosion Severity Map
Figure 5 (Sheet 1)

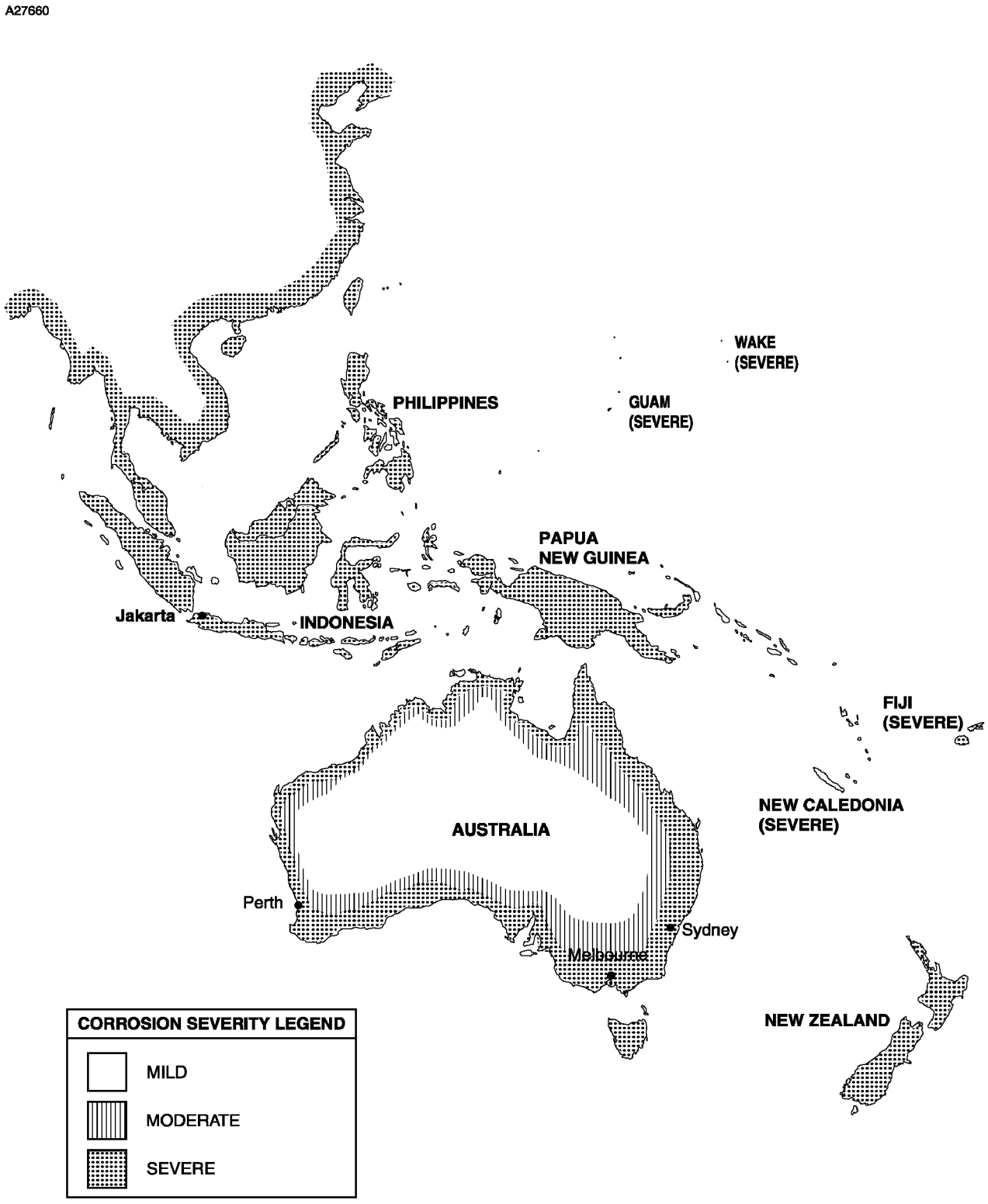
© Cessna Aircraft Company

A27662



Europe and Asia Minor Corrosion Severity Map
Figure 6 (Sheet 1)

© Cessna Aircraft Company



South Pacific Corrosion Severity Map
Figure 7 (Sheet 1)

© Cessna Aircraft Company