	AIRWORTHINESS DIRECTIVE	
Date: 12-18-2024	DA RA N° 2024- 05-01 R1	
<p>THIS AIRWORTHINESS DIRECTIVE, DEVELOPED AND ISSUED BY THE AERONAUTICAL CERTIFICATION DEPARTMENT, OFFICE OF AIRWORTHINESS, PURSUANT TO THE PROVISIONS OF ACT N.º 17285, AERONAUTICAL CODE OF THE REPUBLIC OF ARGENTINA, AND PUBLISHED IN THE OFFICIAL GAZETTE ON MAY 23, 1957 CONTAINING THE MODIFICATIONS SUBSEQUENTLY ADDED AND AIRWORTHINESS REGULATIONS, DNAR PART 39, IS APPLICABLE TO ALL AIRCRAFT OF THE SAME MAKE AND MODEL REGISTERED IN THE NATIONAL AIRCRAFT REGISTRY. AN AIRCRAFT TO WHICH A DA IS APPLICABLE MAY NOT BE OPERATED EXCEPT IN ACCORDANCE WITH THE REQUIREMENTS OF SAID DA.</p>		
APPLICABILITY		
Manufacturer LAVIA SA	Aircraft Type-Model PA25 / PA25-235 / PA25-260, INCLUDING AIRCRAFT MANUFACTURED BY PIPER, CHINCUL, LAVIASA and FAdE SA	
Revision	Revision 1	
Superseded document	This Airworthiness Directive supersedes DA RA N° 2024-05-01, Original Revision.	
Reason for revision	The purpose of this revision is to incorporate instructions under APPENDIX 1 to conduct an Eddy Current NDT Inspection in specific areas of the PA-25 front wing spar, to comply with item 2b) of this Airworthiness Directive.	
Subject	Corrosion found in front and rear spar of left and right wings and cracks found in front spar.	
Description	<p>Reports of corrosion found in the front and rear spars and cracks found in the Fitting – Drag wire pull (P/N 61212-00, Item 32, Figure 5 of the IPC) of the front spar were received through the In-Service Difficulties (SDS) Notification System.</p> <p>This Airworthiness Directive is issued since these findings are not included in any maintenance action.</p> <p>Affected areas:</p> <ol style="list-style-type: none"> 1. Section wingwalk J 61228-00 2. Section wingwalk J 61229-00 3. Front Spar 96006-0 / -1/ 64055-06 / -07 / 61156-02 /-03 4. Rear Spar 96006-0 / -1/ 64056-02 / -03 /61157-02 /-03 <p>After the issuance of EAD 2023-12-01, cracks were found in holes drilled to fix leading edges which might propagate towards the spar web.</p> <p>Considering the CRITICAL NATURE of these findings, instructions are given to prevent any potential failure of the aircraft.</p>	

Corrective Action

1. PART I - FRONT AND REAR SPAR INSPECTION FOR CORROSION AND FRONT SPAR ALTERATIONS.

If the previous EAD 2023-12-01 has been previously complied with and no findings have been reported, continue with Repeated Inspections according to Item 1. ii.

- i. **INITIAL INSPECTION:** For aircraft that have suffered any type of spar alteration (i.e., change of leading edge, repairs, non-approved perforations) or that have accumulated more than 500 flight hours or are over 5 years old, whichever occurs first, **LAVIASA Service Bulletin 25-57-09** must be complied with before the next 10 flight hours, annual inspection or 100-hour inspection from the effective date of this AD, whichever occurs first.

If corrosion, cracks, or alterations as stated in BS 25-57-11 are found, **the aircraft will be grounded** and LAVIASA should be contacted to obtain specific instructions to return the aircraft to an airworthy condition.

If the spar was replaced prior to the effective date of this Airworthiness Directive and it has not been altered, LAVIASA Service Bulletin 25-27-09 should be complied with once the aircraft has accumulated more than 500 flight hours or is over 5 years old, whichever occurs first, from the date the spar was changed.

If no findings have been reported, continue with repeated inspections according to Item 1. ii).

- ii. **REPEATED INSPECTIONS:** Repeat inspections required by LAVIASA Service Bulletin 25-57-09, latest revision, at every annual inspection or 100-hour inspection, whichever occurs first.

Scheduling a PART I and PART II inspection jointly is recommended.

2. PART II- INSPECTING FRONT SPAR FOR CRACKS

a) Spars over 5 years old but less than 40 years old

- i. **INITIAL INSPECTION:** If after complying with PART I of this Airworthiness Directive no findings are reported and the aircraft is over 5 years old but less than 40 years old, in the next annual inspection or 100-hour inspection, whichever occurs first, from the effective date of this AD, the following shall be complied with:

- a. LAVIASA Service Bulletin 25-57-11. The upper/lower front spar flange, specifically the leading-edge fitting area must be inspected for cracks.

- b. If after complying with SB 25-57-11 no findings are reported, **an Eddy-current NDT must be performed to identify the affected areas.**

Corrective Action

If no findings as those mentioned under item 2.a.(iii) are reported, continue with repeated inspections in accordance with item 2a(ii).

If cracks are found, the aircraft will be grounded.

THE RESULT OF THIS INSPECTION MUST BE SUBMITTED TO THE AERONAUTICAL AUTHORITY TO THE EMAIL BELOW.

- ii. **REPEATED INSPECTIONS.** If the aircraft is over 5 years old but less than 40 years old and no findings have been reported under item 2a(i), the inspections required by LAVIASA Service Bulletin 25-57-11, latest revision, must be repeated at each annual inspection or 100-hour inspection, whichever occurs first.
- iii. **AIRCRAFT WITH ALTERED SPARS.** For aircraft where spar alterations have been found involving deviations as stated in SB 25-57-11, **the aircraft will be grounded.**
- iv. If alterations found in spars are not those mentioned in PART 2 (a)iii, an Eddy current NDT inspection should be performed in the wing holes of each altered spar cap. If no cracks are found, an Eddy current NDT inspection should be repeated every 50 service hours.

If cracks are found, the aircraft will be grounded.

If Eddy current NDT repeated inspections are performed every 50 service hours, the spar should be replaced before December 31, 2026.


b) Spars over 40 years old

- i. **INITIAL INSPECTION.** If after complying with PART I of this Airworthiness Directive no findings are reported and the spar installed is over 40 years old, as of the effective date of this Airworthiness Directive and before the accumulation of 50 service hours:

LAVIASA Service Bulletin 25-57-11 should be complied with and the upper and lower flange area of the front spar must be inspected for cracks; specifically, the leading-edge fitting area; and an Eddy-current NDT inspection must be performed to identify the affected areas.

If cracks are found, the aircraft will be grounded.

THE RESULT OF THE INSPECTION MUST BE SUBMITTED TO THE AERONAUTICAL AUTHORITY TO THE E-MAIL BELOW.

	AIRWORTHINESS DIRECTIVE
	DA RA N° 2024- 05-01 R1
Date: 12-18-2024	RAAC 39, AMENDMENT TO ANAC Resolution N.º 602/2014
Corrective action	<p>ii. REPEATED INSPECTIONS: For aircraft that have not reported findings in accordance with item 2b(i), Eddy-current NDT inspections must be repeated and continued at each annual inspection or 100-hour inspection, whichever occurs first.</p> <p>If cracks are found, the aircraft will be grounded.</p> <p>NOTE 1: If the spar was replaced prior to the effective date of this Airworthiness Directive and it has not been altered, LAVIASA Service Bulletin 25-27-09 should be complied with once the spar is over 5 years old from the date the spar was replaced and until it is 40 years old. From that date on, Part 2. b(ii) requirements must be complied with.</p> <p>NOTE 2: In addition to effective compliance with this Airworthiness Directive as well as with the initial and repeated inspection requirements, for this AD to be considered complied with by ANAC, the results are required to be submitted to the Aeronautical Certification Department to the e-mail below.</p>
Effective date	December 18, 2024
Publications	<ul style="list-style-type: none"> • Maintenance/Aircraft Service Manuals, latest revision of affected aircraft models which may obtained at the manufacturer’s website. • Advisory Circular (AC) 43-13-1B: Acceptable Methods Techniques and Practices Aircraft Inspection and Repair. • LAVIA SA Service Bulletins, BS 25-57-09, and BS 25-57-11
<p>REMARKS</p> <p>1. Any natural or legal person is entitled to request this Civil Aviation Administration to review and approve an Alternative Method of Compliance (AMOC) to this Airworthiness Directive by showing the structural condition of the aircraft and duly substantiating an equivalent level of safety for any repair, modification, or alteration.</p> <p>2. This document may be found at: www.anac.gob.ar</p> <p>3. For any questions concerning this DA, please contact the In-Service Difficulties Area, Aeronautical Certification Department at: des@anac.gob.ar</p>	

APPENDIX 1

Instructions for Eddy-current NDT inspection
to inspect of PA-25 aircraft front spar for damages.

1. Purpose

A. Objective

Provide instructions to perform Eddy-current NDT inspections in specific areas of the PA-25 front wing spar to the purpose of identifying discontinuities that have **NOT BEEN DETECTED IN VISUAL INSPECTIONS.**

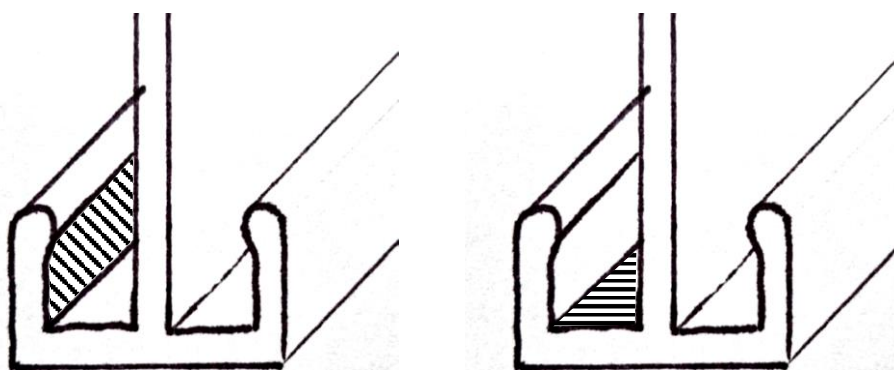
B. Scope

THIS NDT SHOULD BE PERFORMED ONLY IF FLAWS WERE NOT DETECTED BY THE VISUAL BORESCOPE METHOD PREVIOUSLY PERFORMED.

**IF FLAWS WERE DETECTED BY THE VISUAL BORESCOPE METHOD,
DO NOT PERFORM THIS TESTING.**

Parts will be inspected in accordance with **DA RA No 2024-05-01, PART II – INSPECTING FRONT SPAR FOR CRACKS**, in the entire UPPER spar cap between adjoining ribs and in both left and right wings focusing on the leading edge fitting area which will be accessed through inspection access covers N.° 1 and N.° 2., and in the entire LOWER spar cap between adjoining ribs and in both left and right wings focusing on the leading edge fitting area which will be accessed through inspection access cover N.° 6, Ref.: **LAVIA S.A. SB25-57-11.**

(1) The specific upper/lower spar flange areas to be inspected are shown in **Figure 1** below.



Area 1: Front spar cap flange,
leading edge fitting area

Area 2: Inside of spar cap

Figure 1 – Inspection areas of the PA-25 front spar

2. References

The following documents are used as reference for preparing these instructions:

DA RA No 2024- 05-01 – AIRWORTHINESS DIRECTIVE, July 17, 2024

SB No 25-57-11 – LAVIA SA SERVICE BULLETIN, May 31, 2024

MIL-HDBK-728/2 – MILITARY HANDBOOK EDDY CURRENT TESTING, July 1992

3. Personnel qualifications

Personnel performing Eddy Current inspections must be qualified as Level II or Level III non-destructive inspection personnel in accordance with NAS 410 (or equivalent standards found in FAA Advisory Circular (AC) 65-31B)

Eddy current inspections performed in specific areas of the PA-25 front wing spar will be in accordance with MIL-HDBK-728/2 and by following these instruction guidelines.

4. Equipment

A. General

Use inspection equipment that may be calibrated by using the reference standards specified under item D.

B. Instrument

(1) Use an Eddy current instrument that:

- (a) Has a visual display of impedance planes.
- (b) Operates a frequency range of 300 Hz to 9 kHz.

(2) Below is some reference commercial equipment.

- (a) Olympus NORTEC 600
- (b) Olympus NORTEC 600D

C. Probes

(1) The probes shown in **Table 1** were used to develop this procedure and are used only as reference. Equivalent equipment may be used.

PROBE NUMBER	DIMENSIONS	TYPE OF PROBE	FREQUENCY RANGE	BRAND
TPEN9100-6	1.0" Drop - .125" Tip	Microdot	50-500KHz	Techna NDT
TPENFLX-6	6.0" Long - .125" Tip	Flexible	50-500KHz	Techna NDT
SPO-3611	.045" - .060" Thickness	Straight	50-500KHz	Nortec

Table 1 – Types of probes

D. Reference standard

(1) The reference standard shown in **Table 2** was used to develop this procedure.

STANDARD NUMBER	DIMENSIONS	TYPE OF MATERIAL	ALLOY	BRAND
RS0824-2024T3	.008" - .020" - .040"	Aluminum	2024-T3	Techna NDT

Table 2 – Reference Standard

NOTE: The above standard may be purchased. Equivalent standards are accepted.

Any reference standard used must have the same 2024-T3 conductivity within a ±15 % IACs margin of error.

It shall have electrical discharge machining (EDM) notches to simulate defects as calibration references.

5. Inspection preparation

A. Access the inspection areas; see **Figure 4A**.

Access the UPPER spar cap areas through inspection access covers N.° 1 and N.° 2 and the LOWER spar cap areas through inspection access cover N.° 6 in the wing intrados, in accordance with SB25-57-11.

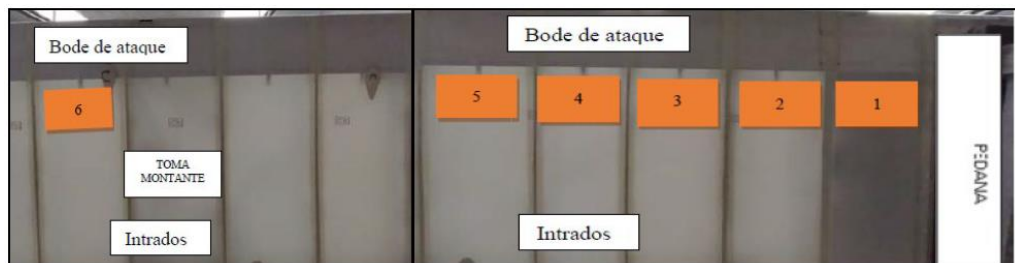


Figure 4A – Inspection access cover area according to SB25-57-11.

B. REMOVE #4-24 x 1/4, Round Head Self Tapping Steel Cad Plated Screws fixing leading edges to spar caps. Installation holes must be free of screws for the inspection.

C. Remove loose paint, dirt, and surface sealant from the area to be inspected. The area to be inspected should be free of dirt, grease, oil, or any other contaminants.

D. If after the inspection no findings were reported, bolt leading-edge flanges with new screws.

6. Instrument calibration

NOTE: The equipment must be configured and operated in accordance with these and the manufacturer's own instructions.

- A. Place the surface probe on the reference standard in an area away from the notches (cracks simulated by EDM-Electrical Discharge Machining). Use reference standards as shown in **Table 2**, paragraph 4.
- B. Determine the null point.
- C. Lift the surface probe from the reference standard used and check the equipment display to view the lift-off response.
- D. Adjust the equipment until the lift-off response is in a horizontal position and to the left of the null point, providing similar responses to those shown in **Figure 4D**.

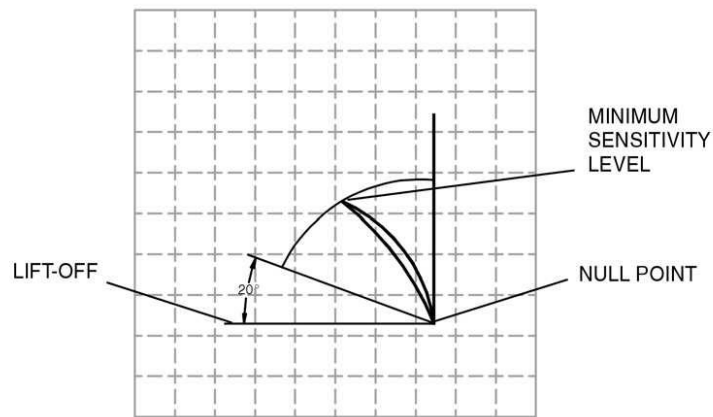


Figure 4D – Type Lift-off Response Signal

- E. Check now the sensitivity of the inspection configuration by placing the probe on the **RS0824-2024T3** standard by means of a non-conducting belt in the standard (if needed), scan the **0,008 in**, **0,020 in** and **0,040 in** deep reference notches. Responses should be like those of **Figure 4E**.

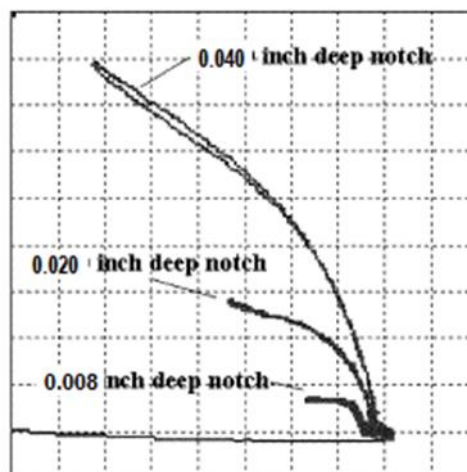


Figure 4E –Type Sensitivity Verification Signal (aluminum)

NOTE: A 0,005-notch response should produce a minimum of FSH 5% in a vertical response (half of a grid division) and be clearly differentiated from the reference noise.

- F. If no responses are obtained, check the instrument configuration, and repeat the standardization procedure.
- G. If after the restandardization this sensitivity cannot be achieved, choose a different probe, and repeat the standardization.

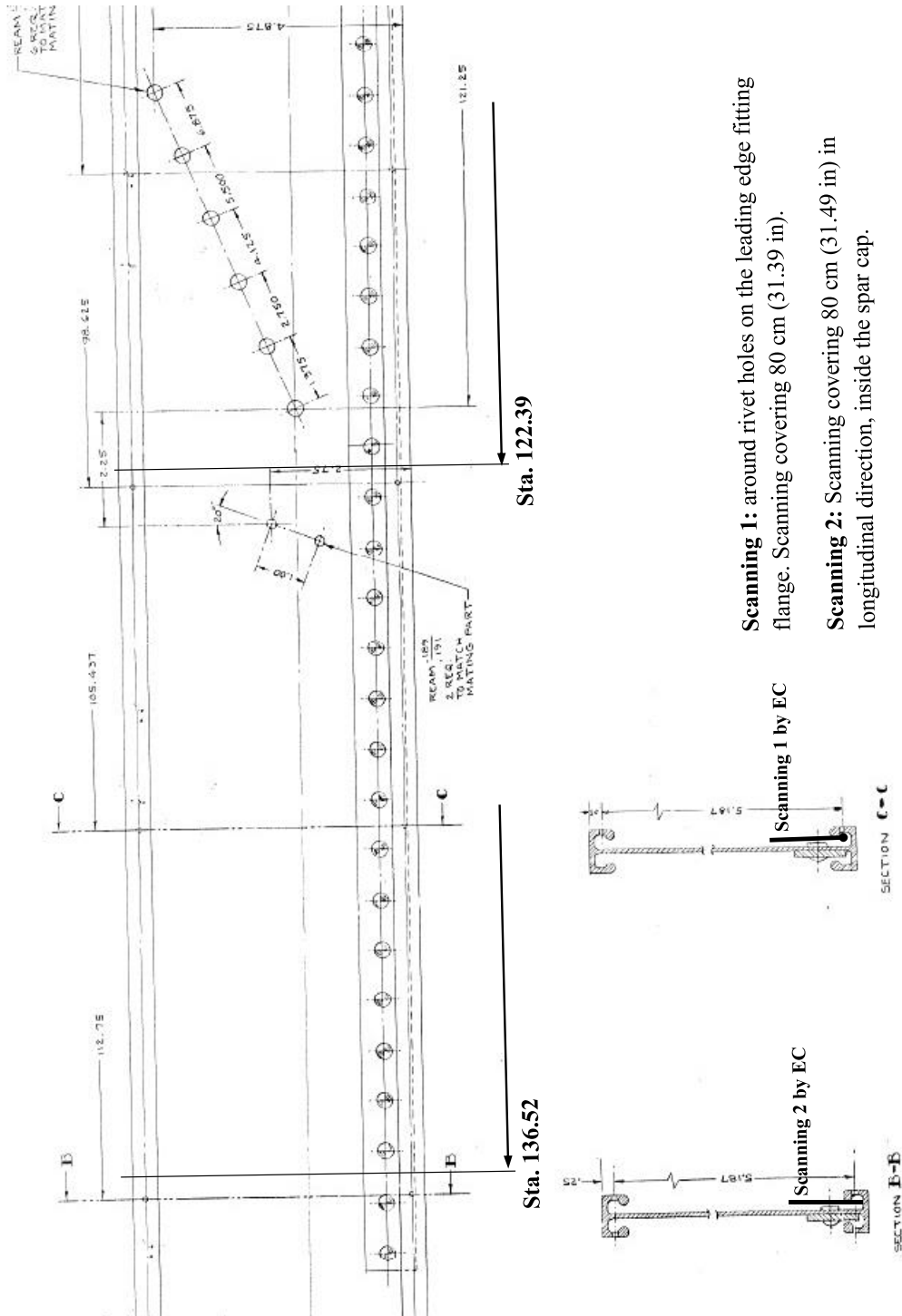
NOTE: This adjustment is used to establish the sensitivity of the inspection and should NOT be considered a criterium for acceptance or rejection.

7. Test instructions

- A. It may be necessary to reestablish the instrument null point in the inspection area to adjust the display based on the differences between the reference standard and the spar.
- B. Whenever possible, the **Area 1** inspection area must be examined from two different directions, 90 degrees from each other.
- C. Examine the inspection area in scanning pitches that are not wider than the Eddy current probe width.
- D. The inspection must be performed in two scanning. See location in **Figure 7D**.

The first scanning must be performed by accessing **inspection access covers N.º 1 and N.º 2** by placing the SPO-3611 probe or equivalent on the inside of the **upper spar cap flange** and by accessing **inspection access cover N.º 6** by placing the SPO-3611 probe or equivalent on the inside of the **lower spar cap flange** over the entire length and between adjacent ribs, particularly on the edges of the existing holes.

The second scanning must be performed by accessing inspection access covers N.º 1 and N.º 2 over the entire length and between adjacent ribs by placing the TPEN9100-6 probe or equivalent on the inside basis of the **upper spar cap** and by accessing **inspection access cover N.º 6** over the entire length and between adjacent ribs by placing the TPENFLX-6 probe or equivalent on the inside basis of the **lower spar cap**.



Scanning 1: around rivet holes on the leading edge fitting flange. Scanning covering 80 cm (31.39 in).

Scanning 2: Scanning covering 80 cm (31.49 in) in longitudinal direction, inside the spar cap.

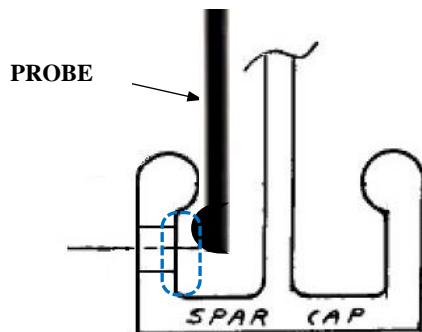
Scanning 1 by EC

Scanning 2 by EC

ACCESS COVER N° 6 - LOWER SPAR CAP

Figure 7D – Spar Caps Location (Cont.)

- E. The actual scanning of the areas to be inspected, as shown in **Figure 7E**, should cover 80 cm (31.49 in) especially around the holes, gouges, scratches and dents, and corrosion pits.



Scanning 1: around rivet holes on the leading edge fitting flange. Scanning covering 80 cm (31.39 in).

Scanning 2: Scanning covering 80 cm (31.49 in) in longitudinal direction, inside the spar cap.

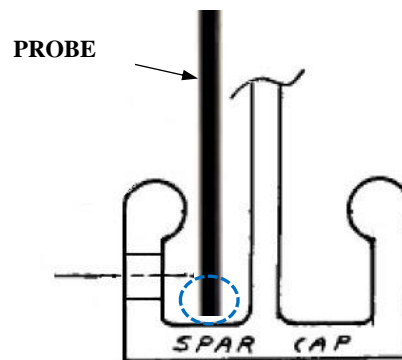


Figure 7E –Inspection areas and scanning

(1) SCANNING 1

- a) For the scanning of Area 1-Inside of the spar cap, use:

SPO-3611 Coil
AN16-BR Adapter

- a) Turn on the equipment and adjust:

Frequency to 120 KHz
Angle to 58°
Horizontal gain to 48.3 dB
Vertical gain to 59.1 dB

- b) Place the probe on the standard and on the equipment.

Press the NULL button
Press the ERASE button

Place the probe on the test tube and slide it across the notches (simulated cracks); the defective area.

- c) Check the sensitivity on the equipment display by using Figure 4E as reference-Type Sensitivity Verification Signal (Aluminum)

i. Scan Area 1 (inside of flange, among rivets) 40 (forty) centimeters to both sides of the jury strut, on the left and right wings.

ii. If the required sensitivity indication was not obtained, repeat step c) above.

(2) SCANNING 2

b) For the scanning of Area 2-Inside of the spar cap, use:

TPEN9100-6 Coil

CN16-TF-6 Wire

c) Turn on the equipment and adjust:

Frequency to 120 Khz

Angle to 19°

Horizontal gain to 60.3 dB

Vertical gain to 70.2 dB

d) Place the probe on the standard and on the equipment.

Press the NULL button

Press the ERASE button

Place the probe on the test tube and slide it across the notches (simulated cracks); the defective area.

e) Check the sensitivity on the equipment display by using Figure 4E as reference-Type Sensitivity Verification Signal (Aluminum)

i. Perform the second scanning on the area specified under item E of this inspection instruction.

ii. If the required sensitivity indication was not obtained, repeat step c) above.

8. Inspection records

All indications equal to or greater than 50% of the minimum sensitivity height and their location must be recorded, indicating the area where they are located on the spar. See model form in **APPENDIX A** - Inspection Records.

NOTE: If during the inspection an indication is detected, repeat the inspection thoroughly in the opposite direction of the probe movement to make sure the indication is real.

If the indication remains, monitor the amount of probe movement or rotation required to move the signal away from the maximum indication response.

9. Test results

A. Unless otherwise specified, a cracked part must be rejected.

B. The end of a crack is to be 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 percent. In that precise moment, the center of the probe coil is considered the end of the crack.

C. It must be considered that in this type of components, aligned pits are likely to be found. These should be considered as linear indications and evaluated as such (cracks open to the surface).

Date: 12-18-2024

RAAC 39, AMENDMENT TO ANAC Resolution N.° 602/2014

APPENDIX A – Inspection Records

AIRCRAFT DATA		
AIRCRAFT MAKE:		MODEL:
CATEGORY:	SERIAL NUMBER N°:	
EQUIPAMENT USED		
METHOD: EDDY CURRENT		STANDARD: MIL-HDK-728/2
BRAND:	MODEL:	S/N:
CERTIFIED BY:		EXPIRATION:
PROBE:		REF. STANDARD:
PA25 AIRCRAFT FRONT SPAR - LEFT/RIGHT WING		
BAY BETWEEN RIBS	EDDY CURRENT INSPECTION RESULTS	
	AREA 1	AREA 2
ACCESS COVER N° 1 (LEFT)		
ACCESS COVER N° 2 (LEFT)		
ACCESS COVER N° 1 (RIGHT)		
ACCESS COVER N° 2 (RIGHT)		
ACCESS COVER N° 6 (LEFT)		
ACCESS COVER N° 6 (RIGHT)		
REMARKS:		

Form. APPENDIX A - Inspection Records



República Argentina - Poder Ejecutivo Nacional
AÑO DE LA RECONSTRUCCIÓN DE LA NACIÓN ARGENTINA

Hoja Adicional de Firmas
Informe gráfico

Número:

Referencia: PROCEDIMIENTO NDT RA 2024-05-01 VERSION INGLES

El documento fue importado por el sistema GEDO con un total de 14 pagina/s.