

AIPS
Airbus Process Specification

Repair of static ports

Uncontrolled copy when printed (: PAREDES LORENZO, JOS MARA (EXTERNAL), 10/05/2018)

Published and distributed by
AIRBUS S.A.S.
ENGINEERING DIRECTORATE
31707 BLAGNAC Cedex
FRANCE

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1 Scope

This Airbus Process Specification defines the procedures and the engineering requirements for Repair of static ports.

This specification shall not be used as an inspection document.

It shall be applied when mentioned in the relevant standard, material specification or Definition Dossier.

2 Normative references

Only normative references cited in the text are listed hereafter.

The latest issue of the publication referenced shall be used.

AM2205.1	Handling of Non-Conformities on External Aluminium Alloy Surfaces and Surface Protection
AIPS 02-05-001	Chemical conversion coating
AIPS 03-03-001	Rework of scratches in aluminium and aluminium alloys
AIPS 03-11-003	Deburring and manual rework of metallic components
AIPS 09-01-002	Cleaning with liquid non aqueous agents including vapour phase
ISO4287	Geometrical Product Specifications (GPS) -Surface texture: Profile method -Terms, definitions and surface texture parameters
SRM A300	Chapter 53-10-00, Page blocks 600
SRM A300-600	Chapter 53-10-00, Page blocks 100
SRM A310	Chapter 53-10-00, Page blocks 100
SRM A319/320/321	Chapter 53-00-11, Page blocks 100
SRM A330/340	Chapter 53-00-11, Page blocks 100
SRM A380	Chapter 53-00-11
A1091	Airbus Requirements for the Management of Hazardous Substances
EC n°1907/2006	REACH – Registration, Evaluation, Authorization and Restriction of Chemical Substances ¹
EC n°1272/2008	Regulation on classification, labelling and packaging of substances and mixtures, amending and repealing ¹

3 Definition, applicability and limitations

3.1 General description of the process

This process specification describes the procedure and requirements for the rework of scratches in static ports areas.

This process is valid during manufacturing.

In static port areas, anemometry probes are installed which determine speed and altitude of the aircraft by means of the measurement of static pressure. In order to avoid measuring mistakes, the requirements for the surrounding surfaces are particularly important, especially concerning the flatness.

¹ Published as European Union Regulation (EC)

3.2 Definitions

Blend out	Local, smooth contoured removal of material
Deburring	Operation comprising the removal of excess material from a component or part
Ra	Arithmetical mean deviation of the surface profile as defined in ISO4287
Rt	Total height of the surface profile as defined in ISO4287

3.3 Applicability

This process is applicable if scratches are detected in the unpainted area surrounding the static port for the purposes given in the scope.

This process is only applicable to CRES and clad aluminium alloy materials.

Within a diameter \leq of 30 mm centered on a static port, any scratches will be assessed by the Aerodynamic design office.

Scratches are to be reworked outside a diameter of 30 mm centered on a static port:

- If the limits given in the relevant SRM are exceeded, which require: $R_a < 0.008 \text{ mm}$ and $R_t < 0.08 \text{ mm}$
- For clad aluminium alloy static ports, to fulfil the requirements given in AM2205.1 and the rework requirements according to the process specification AIPS 03-03-001:

unperforated clad (class 1 in AM2205.1):

- scratch depth $\leq 20 \mu\text{m}$ - no repair
- scratch depth $> 20 \mu\text{m}$ - AIPS98-02-002 process

perforated clad (class 3 in AM2205.1): concession is submitted to the relevant Design Office Department

- For CRES static ports, if the CRES surface present scratches with a total length >50mm or a depth > 0.1mm. Any burr must be removed.

Scratches whose depth ≤ 0.01 mm are not taken into account.

- If the surface is rejected for optical reasons by quality control or customer the AIPS98-02-002 process also shall apply.

3.4 Limitations

This repair process is not applicable for painted areas.

The number of rework processes on a static port during manufacturing is limited to one.

If the aerodynamic limits and the application limits in this specification are differently, the lowest limits from both shall prevail.

4 Requirements to be met by the process

Scratches shall be reworked as soon as possible after occurrence.

For aluminium alloy parts, the requirements to be met concerns the two steps of the repair:

- a mechanical treatment to rework the defect within the SRM and AIPS 03-03-001 requirements.
- a transparent chemical conversion coating performed according to AIPS 02-05-001 type II to ensure surface protection.

The aim of this repair is to restore an acceptable optical area (colourless, mat without marble) and an anticorrosive protection.

For CRES parts, the requirements to be met concerns only mechanical rework.

If the scratches are not reworked directly before first flight an adhesive foil is to be applied to protect the area temporary.

5 Process qualification

It is mandatory for rework of scratches in static port areas to follow strictly the qualified process in this AIPS.

6 Process work and quality control instructions

6.1 Aluminium alloy parts

6.1.1 Preparation of the surface to be treated

Scratches are to be smoothed out by burnishing and abrading according to the requirements of AIPS 03-03-001.

Underneath the area to be treated a foil shall be attached first by means of strips of adhesive tape. Thereby, runs on the skin panel can be avoided which may be caused by chemical conversion coating and rinsing.

The area around the static port shall be covered entirely over a width of at least approx. 300 mm in order to avoid damage on the outer skin due to blasting or splashing of the conversion coating solution.

The pick-up hole for the sensor shall be sealed with a plug and covered with an adhesive tape.

If the probe itself is already installed it shall be covered with an adhesive tape.

The diameter of the covering tape shall be the same diameter as the diameter of the hole plus 4 mm in both cases.

If the static port area is contaminated it shall be cleaned before blasting using a solvent as per AIPS 09-01-002.

6.1.2 Blasting

The blasting process is to be performed without moistening with the EDUCT-O-MATIC or equivalent handheld Vacu-Blast device. Pressure shall be max. 5 bar.

Aluminium oxide with 30-70 µm grit is to be used as blasting agent. The blasting process is completed when the part is 100% covered and the surface has a uniformly mat appearance.

It has to be ensured that the blasting process does not cause debonding of the adhesive tape.

6.1.3 Burnishing

Especially along the edges the blasted surface shall be burnished if necessary with wet fine-grained grinding felt or a tempered and polished steel rod to ensure activation of the surface by total removal of oxide residues.

6.1.4 Cleaning

Dust caused by blasting and grinding shall be thoroughly removed with solvent as per AIPS 09-01-002. The surface shall be left to dry afterwards.

6.1.5 Chemical conversion coating

Within 4 h after blasting Alodine 1500 shall be applied in accordance with AIPS 02-05-001.

6.1.6 Rinsing

Rinsing shall be performed as per AIPS 02-05-001. The resulting liquid shall be removed with cleaning cloths and disposed of. The final rinsing is carried out after removing the adhesive tape covering the surrounding area. The residual water shall be removed with pressured air.

After drying the foil which was meant to protect the surface from runs is removed. In addition remove any left adhesive tape residues.

6.1.7 Application of the protective foil

After 1 h the protective foil TESABAND 4660 or equivalent with the remark "**Remove just before first flight**" shall be applied centrally and bubble-free, e.g. with a rounded plastic spatula, and be pressed onto the surface. (In case the sensor is still not installed an unprinted foil may be used). To perform the hydrostatic test the foil is to be removed and replaced afterwards.

This foil has been chosen, because

- it offers sufficient thickness to protect against impacts
- adhesion is sufficient
- it is easy removable
- no adhesive residues remain after removal
- it is printable

6.1.8 Removal of the protective foil

Before inspection and first flight the foil shall be removed. The bared surface shall be inspected for adhesive residues using a magnifying lens, if necessary. Remaining adhesive shall be removed with cold cleaning agent as per AIPS 09-01-002.

6.1.9 Quality control instructions

The quality assurance shall ensure that:

- the tolerances stipulated by the design documents are observed
- the surface has a uniformly mat appearance after blasting and burnishing
- the chemical conversion coating is carried out properly and is sufficiently rinsed
- the protective foil is applied bubble-free to the optically sufficient treated surface

6.2 CRES parts

6.2.1 Preparation of the surface to be treated

The pick-up hole for the sensor shall be sealed with a plug and covered with an adhesive tape.

If the probe itself is already installed it shall be covered with an adhesive tape.

The diameter of the covering tape shall be the same diameter as the diameter of the hole plus 4 mm in both cases.

If the static port area is contaminated it shall be cleaned before deburring using a solvent as per AIPS 09-01-002.

6.2.2 Deburring

Scratch edges are to be smoothed out by deburring with a suitable tool according AIPS 03-11-003.

6.2.3 Blend out and finishing

After deburring, the following operations shall be performed, complying with the dimensions of the area affected by the rework:

- 1 – Eliminate defect by blending out with abrasive paper grain 100 maximum.
- 2 – Remove aspect defects with abrasive paper grain 240 maximum.
- 3 – Finish the surface with abrasive paper grain 400.

6.2.4 Cleaning

Dust caused by abrading and polishing shall be thoroughly removed with solvent as per AIPS 09-01-002. The surface shall be left to dry afterwards.

6.2.5 Application of the protective foil

See 6.1.7

6.2.6 Removal of the protective foil

See 6.1.8

6.2.7 Quality control instructions

The quality assurance shall ensure that:

- the tolerances stipulated by the design documents are observed
- the surface has a uniform appearance after polishing
- the protective foil is applied bubble-free to the optically sufficient treated surface

7 Environment, health and safety

The manufacturing process shall be in line with Airbus Health and Safety and ecoefficiency policies.

Compliance with A1091 shall be ensured for all materials, substances and/or articles implemented during process.

In particular, targeted substances according to A1091 shall not be used, if a safer alternative is available.

Uses made of all substances involved in the process shall be documented in Safety Data Sheet as required by REACH regulation according to REACH (EC n°1907/2006) and CLP (EC n°1272/2008).

This specification does not necessarily detail all the precautions necessary to meet the requirements of health and safety.

It is the responsibility of the user of this specification to consult and establish appropriate Health and Safety precautions and the method should be operated only by trained personnel.

RECORD OF REVISIONS

Issue	Clause modified	Description of modification
1 11/98		New standard
2 08/11	All	Implementation of a repair process for CRES static ports
3 07/16	2 3.3	Added reference to A1091, EC n°1907/2006 and EC n°1272/2008 Definition on scratches changed for CRES static ports. Scratches with a depth \leq 0.01 mm shall not taken into account