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AIM Solutions Consulting and The Aviation Suppliers Association Presents:

# ALL ABOUT STANDARD PARTS

# First, a history lesson:

During the industrial revolution and in the run-up to WWII, it was broadly recognized that there was a lack of standardization regarding many commonly used parts.



For example, there may have been hundreds of different part number drawings for common castellated nuts as specified in Government contracts for manufacturing.



## First, a history lesson:

In order to stop the proliferation of so many part numbers and thus save millions of dollars, <u>the government</u> started to create 'Standard Parts' as in this early drawing

These part numbers were nearly all prefixed with "NAS", "MS" or "AN" as with this example

<u>A key characteristic</u> of these standard part drawings is the noticeable lack of Proprietary, Patent, or other forms of intellectual property statements.



# **TODAY:**

NOTES: /1/

The government is no longer in the business of keeping up the drawings, and the many of the NAS, AN, and MS drawings have been replaced by groups who specialize in the creation and upkeep of standards as in this SAE example drawing

Notice the Replacement statement in the NOTES section of this same drawing. It replaces an MS drawing



THIS STANDARD IS THE FUNCTIONAL EQUIVALENT OF MS33649 AND IS INTENDED TO BE A SUITABLE REPLACEMENT STANDARD.







So Royboy, how did we get from MS33649 to AS5202?



A neat, **free** website to start such research is at: <u>https://quicksearch.dla.mil/</u>



# Which brings you here

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ASTM Standards for Production and Testing of Medical Supplies to Combat COVID-19 March 27, 2020 - ASTM International has created a site where anyone anywhere in the world can have free access to review and download over twenty-five key ASTM standards for the production and testing of medical masks, gowns, gloves, hand sanitizers, and other Personal Protective Equipment (PPE) and medical equipment. With so many companies and manufacturers switching over to fill the global demand, we are trying to do our part to promote quality and safety in the supply chain. We are attempting to get this information to everyone that needs it: https://www.astm.org/COVID-19/.

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Superceded by...



The following definition is substantively reflected by various Civil Aviation Authorities

**m. Standard Part.** A part manufactured in complete compliance with an established industry or U.S. Government or international specification that includes design, manufacturing, test and acceptance criteria, and uniform identification requirements. It also includes a type of part that the Administrator has found demonstrates conformity based solely on meeting performance criteria, and is in complete compliance with an established industry or U.S. Government specification, which contains performance criteria, test and acceptance criteria, and uniform identification requirements. The specification must include all information necessary to produce and conform to the part, and be published so that any party may manufacture the part. Examples include, but are not limited to, National Aerospace Standards (NAS), Army/Navy (AN) Aerospace Standards (AS), Military Standard (MS), Society of Automotive Engineers (SAE), SAE Sematec, Joint Electron Device Engineering Council, Joint Electron Tube Engineering Council, and American National Standards Institute (ANSI).



So... Are there other Part Numbers besides AN, MS, and NAS that are standard?



In avionics for example, 2N2222 is a common transistor (anything starting with 2N is a transistor), and anything that starts with a 1N is a diode. RN is similarly used for resistors; all standard part numbers.

What about a light bulb P/N 387 or 313?



These P/Ns can be found in SAE Aerospace ARP881 titled "<u>Lamps for Aircraft Lighting</u>", which fits the definition of an Industry Specification (see the definition for standard parts).



So... What's so special about standard parts?



The main differentiator is that Standard Parts <u>DO NOT</u> require trace to a <u>PAH, Production</u> <u>Approval Holder</u>



Be wary of companies that purport the part is a standard part in order to go around Trace issues.



# I don't always buy Standard Parts



But when I do, I ALWAYS require a solid C of C





"Yes, I'm sure the eggs have gone beyond their expiration date."







As was identified during the industrial revolution and war years, today's OEMs recognize that *within their own system* are thousands of common parts in need of standardization. They have thus created *their own system* of standard drawings they themselves developed.

The problem arises that these OEMs have loosely used the term 'standard parts' to describe these <u>Company</u> Standard parts and so, many persons become confused that the previously used definition applies, <u>which it does not</u>! Their drawings are proprietary and protected as intellectual property.

WHY?

Recall that the definition of Standard Parts includes "... and be published so that any party may manufacture the part."

It is not permitted that '*any party*' may manufacture parts whose drawing is intellectual property





BOEING



Unapproved Parts Program

# **Boeing Position on "BAC" Series Parts**

- > To meet FAA regulatory requirements:
  - > Need to be procured directly from Boeing (certified under PC 700)
  - » Manufacturer or distributor needs PMA or TSO approval
- > Direct procurements from manufacturers or distributors:
  - » Do not constitute inspection or acceptance by Boeing Quality Assurance
  - > Must conform to an approved design and are in condition for safe operation
  - > Suitable for the application required by the purchaser
- Listing/identification in Boeing documents (e.g., D1-4426) does not indicate FAA approval to sell parts to airlines, MROs or aftermarket purchasers

For NEW parts, it's clear that you either get the parts from this OEM, or from a manufacturer with PMA or TSO.

This differs from the commonly accepted practice for standard parts which can be obtained and traced to anyone able to provide a C of C

## UNAPPROVED PARTS NOTIFICATION

Aircraft Certification Service



No.: 2017-20170125002 Date: July 17, 2017

http://www.faa.gov/aircraft/safety/programs/sups/upn

#### AFFECTED PRODUCTS

Boeing bushings, part numbers BACB28AK04-042, BACB28AK04-329, BACB28AK05-021, BACB28AK04-075, BACB28AT14B060C, BACB28T10B049C 9 used on Boeing models 727, 737, 747, 757, 767, 777, 787 sold by

#### PURPOSE

This notification advises all aircraft owners, operators, manufacturers, maintenance organizations, parts suppliers, and distributors of Boeing bushings manufactured by

without Federal Aviation Administration (FAA)

production approval.

#### BACKGROUND

Information discovered during an FAA Suspected Unapproved Parts (SUP) investigation revealed that between August 2001 and September 2015,

produced bushings for Boeing models 727, 737, 747, 757, 767, 777, 787 on behalf of V

located in then sold the bushings to various aftermarket users without Boeing's approval. are not FAA production approval holders.

The subject bushings produced by Internet in the subject bushings in the subject bushings produced by Internet in the subject bushings in the subject

- They are not marked PMA or TSOA.
- They are accompanied with a certificate of conformance only.

Read this Unapproved Parts Notice on BAC Parts



## **IRBUS**

**Official Letter** 

То All customers

Maurice Chretien Head of Quality Airbus Customer Service maurice.m.chretien@airbus.com 1 rond-point Maurice Bellonte 31707 Blagnac France

Blagnac, 17th of March 2016

#### Subject: Be sure to source the highest quality for your Standard Parts

Thousands of Standard Parts (airframe hardware, fasteners, electrical hardware, ...) help to keep your aircraft safe and flying.

From

In defining the requirements for controlling the release of such items, FAA (Federal Aviation Administration) and EASA (European Aviation Safety Agency) highlight a clear guality procedure within their Maintenance Annex Guidance, Quoting from that guidance: "Standard Parts are parts manufactured in complete compliance with an established industry [...], competent authority or other government specification which includes design, manufacturing, test and acceptance criteria."1 Basically, the FAA and EASA underline within this document that a Certificate of Conformity is considered as an acceptable certification for the designated Industry Standard Parts. Still they do differentiate industry standards which are in the public domain and company standards which design specification is managed by an OEM. The latter are considered as Proprietary part for which an Authorised Release Certificate such as an EASA Form 1 is required, in the same way as for airframe parts or equipment.

#### What are Airbus Company Standard Parts?

Airbus Company Standard (ACS) Parts are parts for which, all design, manufacturing, inspection data and marking requirements necessary to demonstrate conformity of the part are under Airbus' responsibility. In addition, the Release Certificate guarantees that the part is qualified by Airbus and its manufacturer is fully approved to build the part. The process ensures easy identification and proper certification enabling you to maintain and operate your aircraft in compliance with the regulations. Airbus Company Standard Parts can be identified by a prefix such as ABS, NSA, etc. (please refer to appendices).

| Code  | Category         | verview letter codes.   |
|---|------------------|-------------------------|
| ABS   | Project Standard | Airbus S.A.S.           |
| ASN   | Company Standard | Airbus France S.A.S.    |
| ASNA  | Company Standard | Airbus France S.A.S.    |
| ASNB  | Company Standard | Airbus France S.A.S.    |
| SNE   | Company Standard | Airbus France S.A.S.    |
| BAS   | Company Standard | Airbus UK Ltd.          |
| CSP   | Company Standard | Airbus UK Ltd.          |
| DA  | Company Standard | Airbus Deutschland GmbH |
| DAN   | Company Standard | Airbus Deutschland GmbH |
| DHS   | Company Standard | Airbus UK Ltd.          |
| ON  | Company Standard | Fokker                  |
| IAN   | Company Standard | Airbus Deutschland GmbH |
| J   | Company Standard | Airbus UK Ltd.          |
| IBBN  | Company Standard | Airbus Deutschland GmbH |
| NSA   | Company Standard | Airbus France S.A.S.    |
| ISE   | Company Standard | Airbus France S.A.S.    |
| PAN   | Project Standard | Airbus Deutschland GmbH |
| orEN6xxx<br>(status draft see<br>pelow appendix II) | Company Standard | Airbus S.A.S.           |
| S   | Company Standard | Airbus UK Ltd.          |
| SL.   | Company Standard | Airbus UK Ltd.          |
| T   | Company Standard | Airbus UK Ltd.          |
| ΓΑΝ   | Project Standard | Airbus Deutschland GmbH |
| ГН  | Company Standard | Fokker                  |
| VFN   | Company Standard | Airbus Deutschland GmbH |



If <u>ANYONE's</u> blueprint or drawing contains Proprietary or Intellectual property language, *then it is not* a standard part per the definition, period





SUMMARY of the pesky issues regarding Standard Parts:

New Standard Parts do not require trace to Production Approval Holders, unlike other parts. They can be purchased from anyone who will issue a C of C.

Be wary of firms claiming the parts are Standard but can't back it up.

ABS, BAC, and NSA part numbers are not Standard Parts per the definition.

Just because the parts are hardware such as nut and bolts, you cannot assume they are 'Standard Parts' per the definition







U.S. Department of Transportation Federal Aviation Administration

# Advisory Circular

Subject: Guide for Developing a Receiving Inspection System for Aircraft Parts and Materials 
 Date: 8/12/15
 AC No: 20-154

 Initiated by: AFS-300
 Change: 1

#### APPENDIX 2. AIRCRAFT PARTS AND MATERIAL DOCUMENTATION REQUIREMENTS

| Part Supplier  | Part Condition | Rotable,<br>Repairable,<br>Expendable<br>(Note 1, 2, & 3) | <mark>Standard</mark><br>Part or<br>Material | Commercial<br>Part or<br>Material |
|--|----------------|---|--|-----------------------------------|
| Production Certificate (PC)<br>Holder/Licensee   | New/Rebuilt    | PC  | PC or CS                                     | PS                                |
| Parts Manufacturer Approval<br>(PMA), Technical Standard<br>Order Authorization (TSOA)<br>Holder   |                | PS  | CS   | PS                                |
| U.S. Air Carrier, Repair<br>Station, Repair Station<br>located outside the United<br>States, Production Approval<br>Holder (PAH), Supplemental<br>Type Certificate/type<br>certificate (STC/TC) only | New/Rebuilt    | FL or FR  | CS)  | PS                                |
|  | Repaired       | FR  | -  | -                                 |
|  | Overhauled     | FL or FR  | -  | -                                 |
| Foreign Carrier/<br>Repair Station located<br>outside the United States,<br>Foreign Mfg.   | New/Rebuilt    | JL or JR  | CS   | PS                                |
|  | Repaired       | JR  | -  | -                                 |
|  | Overhauled     | JL or JR  | -  | -                                 |
| Distributor  | Serviceable    | PA  | CS   | PS                                |
| Any Source   | "AS IS"        | PS  | PS   | PS                                |

Purpose: To identify the minimum documents that should be provided when receiving parts or materials.

#### APPENDIX 2. AIRCRAFT PARTS AND MATERIAL DOCUMENTATION REQUIREMENTS (Continued)

#### <u>KEY</u>

**PC** Shipping ticket, packing slip, invoice, etc. from the PC holder/licensee with the PC number listed. Include PAH part number, name, or Commercial and Government Entity (CAGE) code on the documentation.

Optional: Use FL or JL.

- **FL** Federal Aviation Administration (FAA) Form 8130-3 left side signed that lists manufacturer's name or CAGE code. A CAGE code is a controlled identifier used by the Department of Defense (DOD) to identify the manufacturer of a part or product produced under a government contract.
- **FR** FAA Form 8130-3 right side signed for return to service. Include approval reference. XYZ will verify airworthiness and return part to service if form is signed only for work performed.
- JL Joint Aviation Authorities (JAA) Form 1 (invalid if dated after 11/28/04), European Aviation Safety Agency (EASA) Form 1 (valid after 11/28/04), Transport Canada Authorized Release Certificate – Form One, or equivalent form from Bilateral Airworthiness Agreement (BAA) country with left side signed that lists manufacturer name or CAGE code.
- JR JAA Form 1 (invalid if dated after 11/28/04), EASA Form 1 (valid after 11/28/04), Transport Canada Authorized Release Certificate – Form One, or equivalent form from Bilateral Aviation Safety Agreement (BASA) country with right side signed for return to service. Include approval reference. Item cannot be accepted without BASA unless the person/organization is authorized by the FAA, and is so indicated on the form. Operator will verify airworthiness and return part to service if form is signed only for work performed.
- **CS** Certification statement on packing slip or attachment that lists manufacturers name or CAGE code. The statement must indicate the part or material meets the applicable specifications. Optional: Use Certification of Conformance (C of C), material certification, FL, or JL.
- **PS** Packing slip that lists manufactures name or CAGE code. Unmarked PMA/Technical Standard Order (TSO) piece parts require FL, FR, JL, or JR. Parts procured "AS IS" will be treated as UNSERVICEABLE until conformity is accomplished.
- **PA** Packing slip attachments showing traceability through documentation to an approved source listed in Appendix 2. Part markings (i.e., part number, mfg. name, PAH stamp, etc.) may be used in lieu of paper documentation.

Optional: Use FL, FR, JL, or JR.

NOTE for Rotable, Repairable, and Expendable Parts or Components:

(1) For life-limited parts the seller must supply documentation indicating the current status of the part, including items listed in Notes 2 and 3. There must be a sufficient degree of certainty that the parts status is current.

(2) For time-controlled parts the seller must list hours, cycles, and/or days since last overhaul and the record of work accomplished, with approval references.

(3) Airworthiness Directive (AD) and Service Bulletin (SB) modification status must be provided if applicable.

Documentation Summary:

- Certification Statement
- Certificate of Conformance
- 8130-3
- EASA Form 1



*PLEASE*, list the manufacturer's lot or batch number on your forms!

It continues the trace chain of custody in case of a manufacturer's recall

| 1. PART OR MATERIAL CERTIFICATION FORM ATA SPECIFICATION  |                 |                          |   |                |          |                      | CIFICATION 106 |  |
|---|-----------------|--------------------------|---|----------------|----------|----------------------|----------------|--|
| 2. Seller's Name  |                 |                          | 3.  | 3. Reference # |          |                      |                |  |
| 4. Organization<br>Address:   |                 |                          | Phone #:<br>FAX #:<br>SITA/Wire Code:<br>Status: Supplier   |                |          |                      |                |  |
| 5a. Selk  | er's Contract # |                          | 5b.   | Buyer's Co     | ntract # |                      |                |  |
| 6. Item<br>13a. Ret   | 7. Description  | 8. Manufacturer & Part # | 9. 1  | 3ligibility    | 10. Qty  | 11. Serial / Batch # | 1 Status       |  |
| <ul> <li>13b. Obtained From</li> <li>14. <u>New Parts / Material Verification.</u><br/>The following signature attests that the Part(s) or material(s) identified above was (were) manufactured by a FAA<br/>Production Approval Holder (PAH), or to an industry or commercial standard.</li> </ul> |                 |                          | <ul> <li>13c. Last Certificated Agency</li> <li>18. <u>Used, Repaired or Overhauled Parts Verification.</u><br/>The following signature attests that the documentation specified<br/>above or attached is accurate with regard to the item(s) described.</li> </ul> |                |          |                      |                |  |
| 15. Signature   |                 |                          |   | 19. Signature  |          |                      |                |  |
| 16. Nam   | ie              | 17. Date                 |   | 20. Name       |          | 21. Date             |                |  |

Notice: The above signature binds the seller and the SIGNER to the accuracy of the information provided in the Form. Should the information provided in this Form contain inaccuracies or misrepresentations, the signer and the SELLER may be liable for damage and be subject to criminal prosecution under state and federal law.



# By the way...



About Roy Resto

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### STANDARD PARTS: THE UNCOMMON OVERVIEW

Like Share 8 people like this. Be the first of your friends.

You bump into a friend you have not spoken with in a while. The friend asks "so...are you still with Jane?" What should be a simple yes or no answer turns into a slightly awkward and delayed answer from you; "it's complicated". Use of the "it's complicated" strategy means that in order to be truthful with your friend, a quick answer will not do, and that the choice to give any additional details is optional (due to time limits or level of trust), and further, that if you don't give any additional details is twould be socially acceptable to move on. Of course, in the absence of additional details, your friend's imagination would immediately and quietly embark upon a fit of creativity, which may find expression in the presence of other friends, *maybe*. So, what about standard parts? I would like to give a common, simple answer, but guess what? It's complicated.

I'm wont to write this blog because in my consulting business I continue to run across confusion and misinformation about this topic in the industry, especially a lack of **practical advice** (herein bolded for ease of locating it), so I hope to impart some here. I'm going to cover the following topics:

- Definition
- Trace for standard parts
- Lesser known standard parts
- · Standard parts that are only standard within the purview of the OEM
- Documentation for standard parts

#### DEFINITION:

From FAAAC 20-62E titled "Eligibility, Quality, and Identification of Aeronautical Replacement Parts":

# https://www.aviationsuppliers.org/STANDARD-PARTS-THE-UNCOMMON-OVERVIEW

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## C of C's, BEWARE THE DIFFERENCES

Like Share 8 people like this. Be the first of your friends.

Some gestures are universally understood. When a person with first aid skills observes another person at a restaurant frantically clutching their throat, that is a universal sign that aid should be rendered to extricate the offending victual from the patron's airway. One of my callings in life is to let drivers know when one of their taillights is out. I'll pull up alongside and gesture with a circular motion for them to roll down their windows, whereupon I inform them of the condition requiring further maintenance. That circularmotion gesture continues to be universally understood, even though most cars these days have electric windows. When it comes to understanding C of C's, however, it seems that these documents are not so universally

## https://www.aviationsuppliers.org/C-of-C-s-BEWARE-THE-DIFFERENCES





#### Roy Resto is an experienced aviation industry professional having served in management positions with several firms, and is currently President of AIM Consulting Solutions. Most recently he was Vice President of Technical Operations for Tracer Corp. and Messier-Bugatti-Tracer, a family of aviation companies. Prior to this position, he was the COO of Quality Management Solutions LP, a consulting firm specializing in aircraft maintenance. In addition, Roy worked with American Airlines in their Maintenance and Engineering center where he retired as a level 5 Manager, and before that, with McDonnell Douglas. He was also a member of the US Air Force in the Reserves/ANG having served 32 years in Electronic Warfare and Avionics. Resto has served on the FAA's Suspected Unapproved Parts Steering Committee and the Aviation Suppliers Association Board of Directors.

Roy has an MBA in Finance from Oklahoma City University, a BS from Oklahoma State University, an AAS in Avionics from the Community College of the Air Force, and is an Aviation High School graduate. Complementing these, he has an FAA A&P license, an FCC Radiotelephone license with a RADAR endorsement, is an FAA DAR (Designated Airworthiness Representative), Instrument Rated Pilot, and speaks fluent Spanish.

#### **AVAILABLE FOR YOUR CONSULTING NEEDS:**

Roy Resto: royresto@aol.com, 414-467-3063

WWW.AimSolutionsConsulting.com







# That's all folks!

