

What is Preventive Maintenance?

Your presenter...

Mike Busch A&P/IA

Columnist — AOPA PILOT magazine

Instructor — EAA Webinars

Podcaster — Ask the A&Ps (AOPA)

National Aviation Maintenance
Technician of the Year (2008)

President — Savvy Aviation, Inc.



Mo 1000 #7

Mo 1300 #7

Tu 0830 #7

Tu 1000 #7

Tu 1300 #7

We 0830 #7

We 1130 #7

We 1430 #7

Fr 0830 #7

Fr 1000 #7

Fr 1300 #7

Sa 1000 #7

Sa 1300 #7

What is Preventive Maintenance

The EGT Myth

How Healthy Is Your Engine?

To TBO and Beyond...

Leaning The Right Way

Destroy Your Engine in 1 Minute

Cylinder Break-In: Do It Right

What Is Preventive Maintenance?

Cylinder Work: Risky Business

It's Baffling

Where Fuel Meets Air

Benefits of Running Oversquare

How Mags Work...and Fail

Predictive Maintenance

Copyright 2021 Savvy Aviator, Inc.

NEW!

to receive
my monthly
e-newsletter
and weekly
maintenance
stories



The FAA defines who
may perform maintenance
on certificated aircraft
in FAR 43.3...

- **Mechanics**
- **Repair Stations** (and repairmen they employ)
- **Air Carriers** (and repairmen they employ)
- **Manufacturers** (under certain circumstances)



The rule also permits maintenance to be done by non-certificated folks provided it's done under the supervision of and approved by a certificated mechanic



Beyond that, FAR 43.3 permits a pilot to perform preventive maintenance on an aircraft owned or operated by that pilot *(provided the aircraft is used strictly for non-commercial operations under Part 91)* **all by themselves without any A&P involvement**

How

COOL

is that?

So...what exactly is this
“preventive maintenance”
stuff that pilots are
permitted to do on
their own recognizance?



FAR 1.1 says...

“Preventive maintenance means simple or minor preservation operations and the replacement of small standard parts not involving complex assembly operations.”



FAR 1.1 says...

"Preventive maintenance means **simple or minor** preservation operations and the replacement of **small** standard parts not involving **complex** assembly operations."



FAR 1.1 says

"Preventive maintenance means any inspection, servicing, adjustment, or repair that is required by the manufacturer's instructions and the applicable FARs to keep an aircraft in a condition for safe operation." "That definition is about as clear as mud!"



To help clear up this mystery,
the FAA published **Part 43**
Appendix A consisting of lists of
things the FAA considers to be:

- a) major alterations
- b) major repairs
- c) preventive maintenance tasks

The lists of major alterations and major repairs are clearly **exemplary rather than exhaustive**, since it's obviously impossible for the FAA to anticipate every sort of alteration or repair one might want to perform on an aircraft

The preventive maintenance list seems different: It begins with...

"(c) Preventive maintenance.

Preventive maintenance is limited to the following work, provided it does not involve complex assembly operations:"

...followed by a list of 31 specific tasks

- Changing tires
- Servicing shock struts
- Greasing wheel bearings
- Lubricating anything
- Changing engine oil
- Servicing hydraulic fluid
- Repairing upholstery
- Replacing seats and belts
- Replacing side windows
- Simple skin/fabric repairs
- Repairs to cowlings/fairings



- Landing light bulbs
- Position light bulbs
- Repairing landing light wiring
- Replacing spark plugs
- Cleaning/gapping spark plugs
- Replacing prefab fuel lines
- Replacing hose connections
- Cleaning strainers & filters
- Replacing/servicing batteries
- Removing/replacing avionics*
- (and more)



It's a pretty generous list

But it's not obvious
what the FAA was thinking
when it came up with
the list...



Some items on the list
certainly don't seem to be
"simple or minor" operations...

- Replacing side windows?
- Servicing shock struts?
- Replacing tires?



Other items on the list are just plain **head-scratchers...**



**Why is it OK to replace
landing and nav light bulbs
but not post light
or courtesy light bulbs?**



Other items on the list are just plain **head-scratchers...**



Why is it OK to repair **landing light wiring** but not **other wiring?**



Other items on the list are just plain head-scratchers...

OK!



Why is it OK to remove and replace a GNS-530W GPS navigator but not a KT76A transponder?

NOT OK!



Other items on the list are just plain head-scratchers...



OK ???



Why is it OK to change tires but not to check tire pressure? Or to change the oil but not to check oil level?

(Are those tasks considered maintenance?)

Advisory Circular 43-12A ("Preventive Maintenance") says:

"FAR Part 43, Appendix A, paragraph (c) contains the list of those functions determined by the FAA to meet this definition. **If a function does not appear in this list, it is not preventive maintenance."**

That would seem to settle it...

*The FAA says if isn't on the list,
you can't do it without getting an
A&P to supervise you and sign off
your work*



That would seem to settle it...

*The FAA says if isn't on the list,
you can't do it without getting an
A&P to supervise you and sign off
your work*



...or does it?



Federal Aviation Administration

The Coleal Interpretation



In February 2009 the FAA's Office of Chief Counsel, Rulemaking Division (AGC-200) issued a letter in response to a request for legal interpretation by David Coleal, Vice President and General Manager of Bombardier Learjet...

The question Mr. Coleal posed to the FAA rulemaking lawyers was:

“Is it legal for the pilot of a transport-category Learjet 60 to check the tire pressure?”



The question Mr. Coleal posed to the FAA rulemaking lawyers was:

"Is it legal for the pilot of a transport-category Learjet 60 to check the tire pressure?"

**FAA's answer was a
game-changer...**

The Learjet 60 has unusually high-pressure tires (up to 219 psi) and is subject to an Airworthiness Limitation requiring that the tire pressure be checked daily...so checking tire pressure requires a special gauge and special procedures, and is arguably a bit risky...



Coleal's questions to the FAA were:

"Is this something the pilot may do, or does it require an A&P?"

"Does it matter if the Learjet 60 being operated under Part 135 or under Part 91?"



Surprisingly, the FAA's official answer was that checking the tire pressure on a Learjet 60 is a preventive maintenance task, even though it is not on the list set forth in Part 43 Appendix A!



The FAA ruled that a pilot may legally perform the daily tire pressure check provided the Learjet 60 is being operated under Part 91 (non-commercial)...

...but if operating under Part 135, an A&P must perform the check



U.S. Department
of Transportation
**Federal Aviation
Administration**

Office of the Chief Counsel

800 Independence Ave., SW
Washington, DC 20591

FEB 26 2009
Bombardier Learjet
David M. Coleal
Vice President and General Manager
P.O. Box 7707
Wichita, Kansas 67277-7707

Re: Request for Interpretation of Applicable Rules in 14 C.F.R. parts 43,
91, and 135 Pertaining to Whether a Pilot of a Transport Category
Aircraft May Check Tire Pressure During a Normal Preflight Inspection

Dear Mr. Coleal:

By letter dated January 8, 2009, you requested a legal interpretation that would answer the question whether a pilot could legally check tire pressure on a transport category aircraft that was being operated under 14 C.F.R. parts 91 or 135. You noted that this issue had been discussed at three meetings between representatives of Bombardier Learjet and officials from various offices of the FAA, including the Flight Standards Service (AFS). Your request was supplemented by a letter dated January 30, 2009, from David M. Hernandez, attorney for Bombardier Learjet. Mr. Hernandez's letter provided additional information and legal analysis. For the reasons discussed below, it is our opinion that checking tire pressure on the transport category Learjet Model 60, the aircraft addressed in the correspondence, is preventive maintenance.

While your question was framed in the context of transport category aircraft, your inquiry, including as supplemented by Mr. Hernandez, is specific to the Learjet Model 60 aircraft. You referenced an FAA Continued Operational Safety (COS) initiative in which, in November 2008, the FAA's Wichita ACO (Aircraft Certification Office) requested an AFM (Airplane Flight Manual) limitation for the Learjet Model 60 that would require daily tire pressure checks. The issue, as you alluded to in your letter, is whether checking tire pressure on the Learjet Model 60 is considered to be a maintenance or preventive maintenance function, versus a simple preflight inspection task. Your correspondence correctly observed that, under 14 C.F.R. § 43.3(g), for aircraft not operated under part 121, 129, or 135 (e.g., part 91), a pilot may perform preventive maintenance on an aircraft operated by that pilot.

2

Federal Aviation Regulations, *maintenance* is defined to mean: repair, preservation, and the replacement of parts, but excludes 14 C.F.R. § 1.1. And, *preventive maintenance* is defined to mean: "inspections, adjustments, lubrications, and the replacement of small standard parts, excluding operations." *Id.* Preventive maintenance, in turn, is less complex than those deemed to be maintenance, and is based on the knowledge, skill, and tools required.

Maintenance tasks are listed in 14 C.F.R. part 43, appendix A, which sets forth in 32 numbered subparagraphs items the FAA considers preventive maintenance. Even though the introductory text of that "[p]reventive maintenance is limited to the following work in view of the broader definition of preventive maintenance in that such limitation is not controlling. Similarly, for the same that the following sentence in Advisory Circular 43-12A, (which was referenced in Mr. Hernandez's letter), is overly restrictive, found in Paragraph 3(b)(1), states: "If a task or maintenance in the list, it is not preventive maintenance." As with the other A (i.e., on major repairs and major alterations), the lists are not of the tasks in each category—they cannot be considered all-inclusive, many "simple or minor preservation operations [tasks]" are of small standard parts not involving complex assembly tasks, especially on small general aviation aircraft, that the agency considers preventive maintenance, though they are not included in the 32 tasks listed in that Flight Standards' Aircraft Maintenance Manual. We clarify this issue in a future revision to the AC.

Mr. Hernandez observes that the first item listed as preventive maintenance in 14 C.F.R. part 43, appendix A, is "Removal, installation, and repair of landing gear tires," which is not listed as a preventive maintenance item. The issue is two-fold: First, because checking tire pressure is not listed, it is not preventive maintenance. Second, because checking tire pressure is but a subset of the tasks necessary in removing, installing, and repairing tires, it does not rise to the level of even preventive maintenance, and should be considered an appropriate pre-flight inspection task. We do not agree. 43-12A also cautions that "because of differences in aircraft, a task that is preventive maintenance on one aircraft and not on another." The above discussion regarding repairing landing gear tires illustrates this maxim. The FAA's position is that a small general aviation airplane may change and repair its tires, and its agency would not consider the changing and repair of a landing gear tire on a transport category airplane to be preventive maintenance that a pilot

3

that Bombardier Learjet's engineering and pilot specialists believe that only "qualified pilots to safely perform tasks that require direct interaction with the airframe under the umbrella of preflight inspection" are authorized to perform such tasks. We believe that, given the long list of examples of pre-flight actions performed daily by pilots, including many actions that require use of a calibrated device, it is not reasonable to request that a pilot take no position on the propriety of any of the cited pre-flight tasks.

This issue with officials in the FAA's Flight Standards Service Division (AFS-300) and concur with their determination that it is not a Learjet Model 60 aircraft is preventive maintenance and not a preflight inspection task. We believe their determination is a reasonable one based on the facts and circumstances. These include the high tire air pressure required for a proper and calibrated gauge, and the possibility of an error if the check is not performed properly. Accordingly, a pilot operating under the operating rules of 14 C.F.R. part 91 may, in accordance with the rules of 14 C.F.R. § 43.3(g), perform daily landing gear tire pressure checks. However, a pilot of that aircraft operating under 14 C.F.R. part 135 may not perform that task.

Under 14 C.F.R. part 11, an affected party may seek relief from an FAA by filing a petition for an exemption. This is an avenue open to persons who operate a Model 60 airplane under Part 135 who would be adversely affected by the requirement that only a certificated mechanic may check the tire pressure. Each petition should specify in its petition the relief sought and the reasons for the relief. In addition, each petition must state the reasons why a grant of relief is in the public interest and why granting the exemption would not adversely affect the level of safety at least equal to that which the exemption would provide. As to whether the FAA would grant a "blanket exemption" applicable to all operators upon their petition, we note that it is not the FAA's policy to do so.

This letter was prepared by Edmund Averman, an Attorney in the Regulations Division of the Office of Chief Counsel and coordinated with the Aircraft Certification Office of the Office of Flight Standards. If you have additional questions or, please contact us at your convenience at (202) 267-3073.



David M. Hernandez
Attorney for Regulations, AGC-200

David M. Hernandez, Esquire

Many preventive maintenance tasks are listed in 14 C.F.R. part 43, appendix A, paragraph (c). The paragraph sets forth in 32 numbered subparagraphs items the FAA has determined to be preventive maintenance. Even though the introductory text of subparagraph (c) states that “[p]reventive maintenance is *limited* to the following work” (emphasis added), in view of the broader definition of preventive maintenance in section 1.1, we believe that such limitation is not controlling. Similarly, for the same reason, we also believe that the following sentence in Advisory Circular 43-12A, Preventive Maintenance (which was referenced in Mr. Hernandez’s letter), is overly restrictive. That sentence, found in Paragraph 3(b)(1), states: “If a task or maintenance function does not appear in the list, it is not preventive maintenance.” As with the other paragraphs of Appendix A (*i.e.*, on major repairs and major alterations), the lists are better viewed as examples of the tasks in each category—they cannot be considered all-inclusive. There are, no doubt, many “simple or minor preservation operations [tasks]” and many “replacement[s] of small standard parts not involving complex assembly operations” performed daily, especially on small general aviation aircraft, that the agency would consider to be preventive maintenance, though they are not included in the 32 listed items. It is our understanding that Flight Standards’ Aircraft Maintenance Division is planning to clarify this issue in a future revision to the AC.



"Even though the introductory text of [Appendix A] subparagraph (c) states that '[p]reventive maintenance is limited to the following work...' in view of the broader definition of preventive maintenance in section 1.1, we believe that such limitation is not controlling."



"Similarly, for the same reason, we also believe that the following sentence in Advisory Circular 43-12A ... is overly restrictive:

'If a task or maintenance function does not appear in the list, it is not preventive maintenance.'"



"As with the other paragraphs of Appendix A (i.e., on major repairs and major alterations), the lists are better viewed as examples of the tasks in each category—they cannot be considered all-inclusive."



"There are, no doubt, many 'simple or minor preservation operations [tasks]' and many "replacement[s] of small standard parts not involving complex assembly operations" performed daily, especially on small general aviation aircraft, that the agency would consider to be preventive maintenance, though they are not included in the ... listed items."

So, the official FAA answer—one that set a legal precedent that been in effect for the past 10 years—is that the preventive maintenance is NOT limited to the 31 items on “the list” but can include all sorts of other tasks of comparable ease and non-complexity

If you want to change a burned out post light lamp, just go ahead and do it, never mind that it's not on the list

Since it's no more difficult, complex or risky than changing a landing light or nav light (both of which tasks are on the list), what possible reason could the FAA have for NOT considering it to be preventive maintenance?

Similar logic would apply to repairing faulty nav light or strobe light wiring, which is not on the list even though repairing landing light wiring is on the list

How could one of these reasonably be considered preventive maintenance and the others not be?

You get the idea...

Given what the FAA said in the Coleal letter, if you do something not on the list that's similar to something that is on the list and no more difficult, complex or risky, you're on pretty firm legal ground should your action ever be challenged



Contrary to conventional wisdom—
which might have been valid prior to
2009 but no longer is—you're NOT
limited to the 31 items on the list



So just do it!

Mo 1000 #7

Mo 1300 #7

Tu 0830 #7

Tu 1000 #7

Tu 1300 #7

We 0830 #7

We 1130 #7

We 1430 #7

Fr 0830 #7

Fr 1000 #7

Fr 1300 #7

Sa 1000 #7

Sa 1300 #7

What is Preventive Maintenance

The EGT Myth

How Healthy Is Your Engine?

To TBO and Beyond...

Leaning The Right Way

Destroy Your Engine in 1 Minute

Cylinder Break-In: Do It Right

What Is Preventive Maintenance?

Cylinder Work: Risky Business

It's Baffling

Where Fuel Meets Air

Benefits of Running Oversquare

How Mags Work...and Fail

Predictive Maintenance

Copyright 2021 Savvy Aviator, Inc.



to attend my free monthly maintenance webinars on the first Wednesday of each month

(sponsored by EAA and Aircraft Spruce)



to participate in my free monthly podcast "Ask the A&Ps"

with my colleagues Colleen Sterling A&P/IA and Paul New A&P/IA sponsored by AOPA





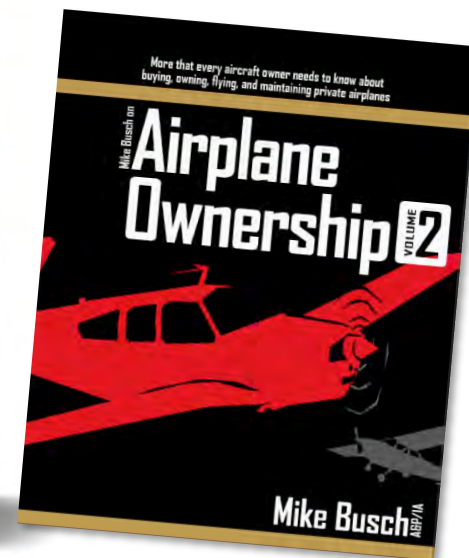
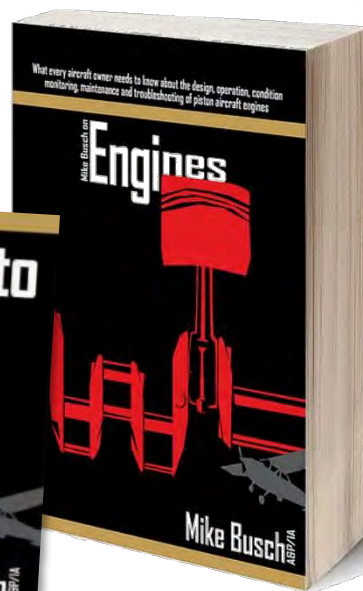
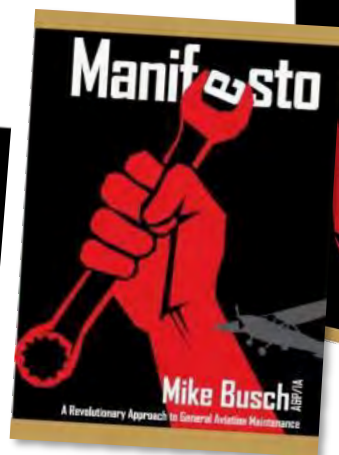
**to receive
my monthly
e-newsletter
and weekly
maintenance
stories**



*I'm happy to
autograph your book*

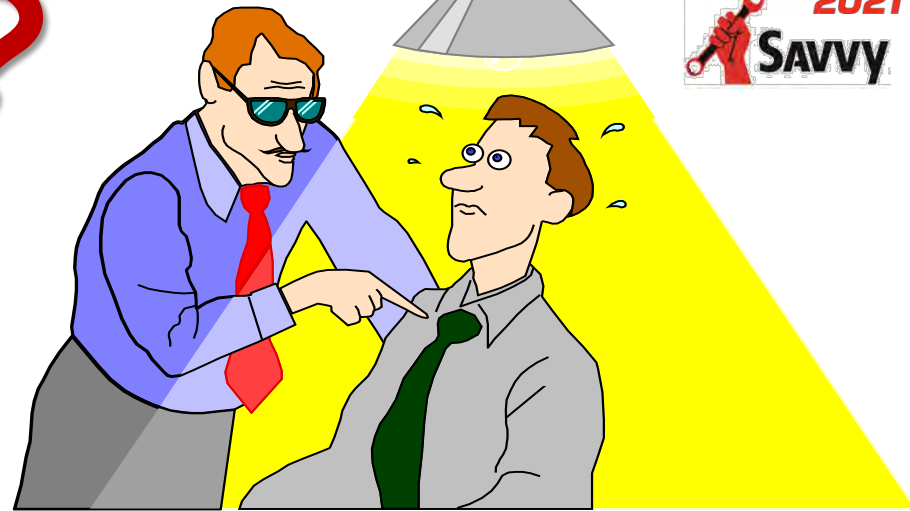


Available at
amazon



PLEASE POST YOUR REVIEWS!

Questions?



Contact info:

Mike.Busch@SavvyAviation.com

 **SAVVYAviation.com**

To receive my monthly newsletter and weekly maintenance stories,
text “SAVVY” to 33777