EASA Part-ML (Pilot Owner) Maintenance

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Changes and new possibilities in light aircraft maintenance for owner pilots

Part-ML aircraft maintenance programme (AMP)				
Aircraft identification				
1	Registration(s): **OE-PAT**		Type: **DA62**	Serial no(s): **62.010316**
	Owner: **Patrick Lienhart**			
Basis for the maintenance programme				
2	Design approval holder (DAH) instructions for continued airworthiness (ICA) ☒		Minimum inspection programme (MIP) as detailed in the latest revision of AMC1 ML.A.302(d) ☐ Other MIP complying with ML.A.302(d) ☐ **(List the tasks in Appendix A)**	
Design approval holder (DAH) instructions for continuing airworthiness (ICA)				
3	**Equipment manufacturer and type**		**Applicable ICA reference (revision/date not required assuming the latest revision will always be used)**	
For aircraft other than balloons				
3a	Aircraft **(other than balloons)**	**Diamond Aircraft Industries GmbH**	**DA62 AMM Ref. 7.02.25**	

AMP Example Cover

Since March 2020, EASA Part-ML is in effect. The rules governing the maintenance of light airplanes are set into law and apply to all applicable airplanes bearing an EASA registration, no matter the national country. This article is meant as a brief overview to EASA Part-ML for a typical owner/pilot.

Finally, the days of inquiring “can I extend engine TBO in France” or “can I keep the prop on condition in Germany” are gone. The rules are harmonized throughout EASA member states, and they are seemingly more adequate for the operations and clientele they intend to regulate.

If so desired, the owner can elect to bear full responsibility for airworthiness, and with that comes more flexibility to maintain one’s airplane.

The following is applicable to privately owned and operated (according to EASA Part NCO) airplanes with a maximum weight not exceeding 2730kg. We're talking of typical Single/Multi Engine Piston/Turboprop planes here.

Again to reiterate, as long as the maximum weight is less than 2730kg, and the type of operation is non commercial other than complex (in other words: non revenue private flights and flight training*), Part-ML applies.
Examples: Cessna 172? Check!
Cirrus SR22? Check!
Piper PA46, M600 or Jetprop? Check! TBM 900 series? Negative (weight in excess of 2730kg)!

Abbreviations:

- AMP: Aircraft Maintenance Program
- MIP: Minimum Inspection Program
- DAH: Design Approval Holder (Manufacturer)
- AMM: Aircraft Maintenance Manual issued by DAH
- *CAMO: Cont. Airworthiness Management Organisation (required for commercial flight training/ ATO)
- CAO: Basically a CAMO, but with less authority requirements for it's organisation (Safety Management etc..)
- NCO: Non Commercial other than Complex (Private flights with SEP/MEP/SET planes)
- TCDS: Type Certificate Data Sheet
- AD: Airworthiness Directive
- MX: Maintenance (sorry, airline pilot lingo)
- TBO: Time before Overhaul (e.g. a manufacturer's recommendation to overhaul an engine, propeller or

other xomponent at a certain age or after a number of hours in operation)
- On Condition: Never touch a running system, but rather inspect continuously and replace or overhaul etc.. only when broken.

A simplified step by step methodology to EASA Part-ML

1. Declaration

The pilot owner declares (no approval required) the AMP for his airplane.

2. The Basis of the AMP

An AMP can be based either on
a) the MIP according EASA Part-ML
or
b) the AMM of the DAH
or
c) is **not** required at all if an owner follows all DAH instructions. In this case, one would declare that the airplane is maintained by observing all DAH AMM instructions (including engine/prop TBO limits). It is then not required to formulate a custom AMP.

3. Adapting the AMP

If option 2 a) or b) was elected, an AMP pertaining to a specific aircraft or, if all planes are identical, a fleet of planes, needs to be formulated. EASA published a handy AMP template to fill in.

Except for Airworthiness Limitations stated in the TCDS and/or the DAH AMM (usually found in chapter 4) as well as any ADs, the owner can deviate from the recommendations

stated in the DAH AMM (which, on modern planes are usually found in chapter 5).

Item		Replacement Limits
1.	Engine	There are no life limits on the engine or its components. Refer to Chapter 5, Time Limits and Maintenance Checks, for recommended overhaul schedule.
2.	Propeller	There are no life limits on the propeller or its components. Refer to Chapter 5, Time Limits and Maintenance Checks, for recommended overhaul schedule.
3.	Cirrus Airframe Parachute System (CAPS) Rocket Motor Assembly	Replace with new or recharged unit every 10 years. Refer to Chapter 95, Special Purpose Equipment.
4.	Cirrus Airframe Parachute System (CAPS) Parachute	Replace with new or repacked (inspected/ repaired/repacked) unit every 10 years. Refer to Chapter 95, Special Purpose Equipment.
5.	Cirrus Airframe Parachute System (CAPS) Reefing Line Cutters	Replace with new line cutters every 6 years. Refer to Chapter 95, Special Purpose Equipment.
6.	Inflatable Restraint System Electronic Module Assembly	Refurbish unit every 7 years. Replace with new unit every 14 years. Refer to Chapter 25, Equipment and Furnishings.

Example of Airworthiness Limitations in Chapter 4 of the DAH AMM (must be observed) [© Cirrus Design Corporation]

Item	Interval		Maintenance		Notes and Reference
	Hrs	Yrs	O'haul	Replc	
16. Anti-Ice Propeller Boot Serials w/ Hartzell propeller	2400*	6*		X	*Whichever first. Refer to Hartzell Propeller Manual 133C
17. Hartzell Propeller	2400*	6*	X		*Whichever first. Ref Hartzell Service Letter 61.
18. McCauley Propeller	2400*	6*	X		*Whichever first. McCauley Service Bulletin 137.

Examples of Time Limits in Chapter 5 of the DAH AMM (recommendations, deviations can be applied in the AMP) [© Cirrus Design Corporation]

These deviations cannot be less restrictive than the MIP though, and therefore “on condition” translates to

inspecting the items at least every 100 hrs or annually, whichever occurs first, as this is the standard interval specified in the EASA MIP.

Example:

The DAH AMM for the Cirrus SR22/SR22T states the following time limits (Note: these are not airworthiness limits and legally only a recommendation, which is why you can decide for alternate tasks and intervals):
Task → Overhaul Engine
Interval → 12 years/2000hours

Task -> Replace Alternator
Interval -> Every 1700 hours

Again, you can deviate from these DAH AMM time limits in your AMP to maintain e.g. the engine “on condition” by stating:
Task → Compression Test, Boroscope, Oil Filter Inspection et al..
Interval → 100 hours/12 months whichever earlier.

Again, the 100 hours/12 months align the DAH AMM deviation of the individual AMP to the provision of “not being less restrictive than the MIP”. The MIP includes a blanket statement for all MIP tasks and items that states:

To be performed at every annual/100-h interval, whichever comes first.

*AMC1ML.A.302(d) Aircraft maintenance programme*none

4. Pilot Owner Maintenance – time to get your hands dirty, or not, your choice!

A Pilot Owner now has extensive rights to perform and **release** his own maintenance actions. For instance, if the items for the 50hr check on your airplane are all covered by the EASA published list of Pilot Owner maintenance tasks, you can issue the CRS – Certificate for Release to service after the 50hr inspection yourself.

5. The ARC (Annual Inspection and Airworthiness Review Certificate)

The ARC is valid 12 months and can be extended by

- a Part 145 workshop (organisation)
- a CAMO/CAO (organisation, this doesn't mean your airplane must be under a CAMO/CAO contract. It can, if you elect so – see 6.)
- the Competent Authority ("national aviation authority", organisation)
- independent review staff (Part 66 with "ARC approval", a person)

It's important to note that, for obvious reasons, your AMP will be subject to review during the ARC extension as well. While the airworthiness review staff isn't responsible for the AMP, they can elect to not extend the ARC if they deem your AMP grossly negligent/inappropriate. My feeling is there can be a bit of a tear here.

While the owner is fully responsible for maintenance and airworthiness, the airworthiness review staff might assume to be "blamed" as well for signing off an ARC on a plane that had an „insufficient AMP". Perhaps it isn't adequate for the type of operation or not taking applicable risks into account at all. As long as sensible MX practices in line with

the actual use case of an airplane are applied, there shouldn’t be any obstacles. It goes without saying that Maintenance. is. very. critical. to. flight. safety!

Quoting EASA:

When evaluating an alternative to a maintenance task issued or recommended by the DAH, such as the extension of TBO intervals, or when considering not to include a maintenance task issued or recommended by the DAH, a risk-based approach should be taken, considering aspects such as the operation of aircraft, type of aircraft, hours and years in service, maintenance of the aircraft, compensating measures, redundancy of components, etc.

*AMC1ML.A.302(c)*none
Pertaining to the above, EASA also published risk aspects that should be considered. An excerpt is shown below.

	Examples
OPS approval	HIGHER RISK: commercial operation, commercial flight training MEDIUM RISK: flight training by an association, non-commercial specialised operations (SPO) LOWER RISK: private
Flight rules	HIGHER RISK: instrument flight rules (IFR) MEDIUM RISK: visual flight rules (VFR) at night LOWER RISK: VFR by day
Aircraft weight	HIGHER RISK: Other than ELA1 MEDIUM RISK: ELA1 aircraft other than light sport aeroplanes (LSA), very light aircraft (VLA), sailplanes and powered sailplanes LOWER RISK: LSA, VLA, sailplanes and powered sailplanes
Who manages the airworthiness of the aircraft?	HIGHER RISK: owner LOWER RISK: CAMO/CAO
Who maintains the aircraft?	HIGHER RISK: pilot-owner MEDIUM RISK: independent certifying staff LOWER RISK: maintenance organisation
Time in service (flight hours, years)	HIGHER RISK: very high number of hours or years MEDIUM RISK: medium number of hours or years LOWER RISK: low number of hours or years

Risk aspects that should be considered according to EASA

Points 1. to 5. sum up the basics of maintaining an airplane according to EASA Part-ML. Now, let me go into some additional details for completeness.

6. CAMO or CAO

A Pilot and/or Owner can also voluntarily contract a CAMO or CAO. In this case, the owner is not responsible for the maintenance and airworthiness of his plane. This responsibility then rests with the contracted CAMO/CAO.

Bearing this responsibility, a CAMO/CAO will track the maintenance status of the airplane, manage workorder packages for maintenance organisations and issue/extend the ARC. Needles to mention here is that the added convenience, service and most importantly the delegated liability come at a price. The bandwith here is several hundred to several thousand Euro annually, with the occasional CAMO service provided complimentary to good/long-standing customers at some maintenance shops.

The AMP is subject to approval by the contracted CAMO/CAO. Pilot Owner Maintenance and deviations – see pt. 3 above – are still possible, but are obviously subject to the consent of the CAMO/CAO as well. It's not black and white, your experiences will vary.

Similar to pt. 2 above (except for the owner bearing no responsibility) a contracted CAMO/CAO can also follow the DAH AMM, in which case no individual AMP will be created. I want to emphasize that in both cases, pt. 2 above and using a CAMO/CAO, the airplane will be maintained according to exactly the same instructions (the DAH AMM). Food for thought.

7. Exceptions and special provisions

While legally flight training in an ATO is Part NCO, airplanes in commercial ATOs ("open to the public") require to be under contract with CAMO or CAO, except when the ATO "adds" an owner's airplane and only the owner will be trained on it.
For non-profit clubs that operate an ATO ("not open to the public"), airplanes owned or operated ("leased") need no

CAMO/CAO contract. As to how „open“ or „closed“ a commercial ATO vs. a flying Club is in reality is subject to debate, however those are the rules.

Also noteworthy so I’ll mention it again, is that an AMP can be applied to a fleet of airplanes (same type) if they are to be maintained identically.

A quick recap of options for EASA airplane Owners and Pilots:

1. If you contract a CAMO/CAO → same options as ever before
The CAMO can either approve an individual AMP or follow the DAH AMM.
Advantage: Responsibility for airworthiness lies with the CAMO. This can be a liability factor in case things get really ugly in court.

2. If you declare your own AMP → new and harmonized options all over EASA territory for Owners and Pilots.

3. Declare that your airplane will be maintained according to the DAH AMM, then you do not need to create an AMP → While still bearing the responsibility, you can always point to the DAH AMM, as that is the basis for maintaining your airplane. This might be a good choice if you do not want a CAMO/CAO but choose a “drop keys, no questions asked” style of maintenance, for instance to preserve resale value on a newer plane, peace of mind, ease of operation and would like to have the option to point at the DAH AMM for liability reasons (this isn’t legal advice!).

8. Conclusion and Recap

EASA’s Part-ML provisions allow maintenance of light airplanes in a very similar fashion to N-reg planes (FAA Part. 91), which, in the end, will materialize better and more tailored ways of maintenance at bearable costs.

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