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Eidgenössisches Departement für Umwelt, Verkehr,
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Bundesamt für Zivilluftfahrt BAZL
Sicherheit Flugbetrieb
Flugschulen und Leichtaviatik

Minimum Equipment

Aircraft operated under Part-NCO, including certain Annex I (non-EASA) aircraft

SBFF/rhf

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Applicability of Part-NCO to certain annex I aircraft in Switzerland

- SR 748.127.7: Verordnung des UVEK vom 25. Mai 2023 über die Umsetzung der Vorschriften über den Flugbetrieb nach der Verordnung (EU) Nr. 965/2012 (admin.ch)

- Since July 1st 2023 the applicability of Part-NCO has been extended to annex I aircraft.
  Part-NCO now applies to: SEP/MEP/SET <5.7t aircraft with ICAO certificate of airworthiness as well as ecolight, ultralight, historic, homebuilt, limited and restricted aircraft with permit to fly.

- Aircraft of special categories (refer to VLK SR 748.941) and experimental aircraft are exempted.

Required minimum equipment

The following documents provide all required information to determine your aircraft's required minimum equipment:

Type Certificate Data Sheet (TCDS)	• The TCDS indicates the certification basis and may contain minimum equipment items
Certification Basis	• Basic equipment which must be operational • Aeronautics Bulletin 7A 1934, CAR 3, CFR/CS-23
POH, AFM, AFMS	• The POH/AFM and its supplements (AFMS in case of STCs or CS-STAN) may define further minimum equipment or contain a KOEL
Airworthiness Directives (AD)	• ADs may require additional equipment or may require certain equipment to be operational
Part-NCO	• Part-NCO Subpart IDE contains the minimum equipment for VFR day, night, IFR and other operational conditions

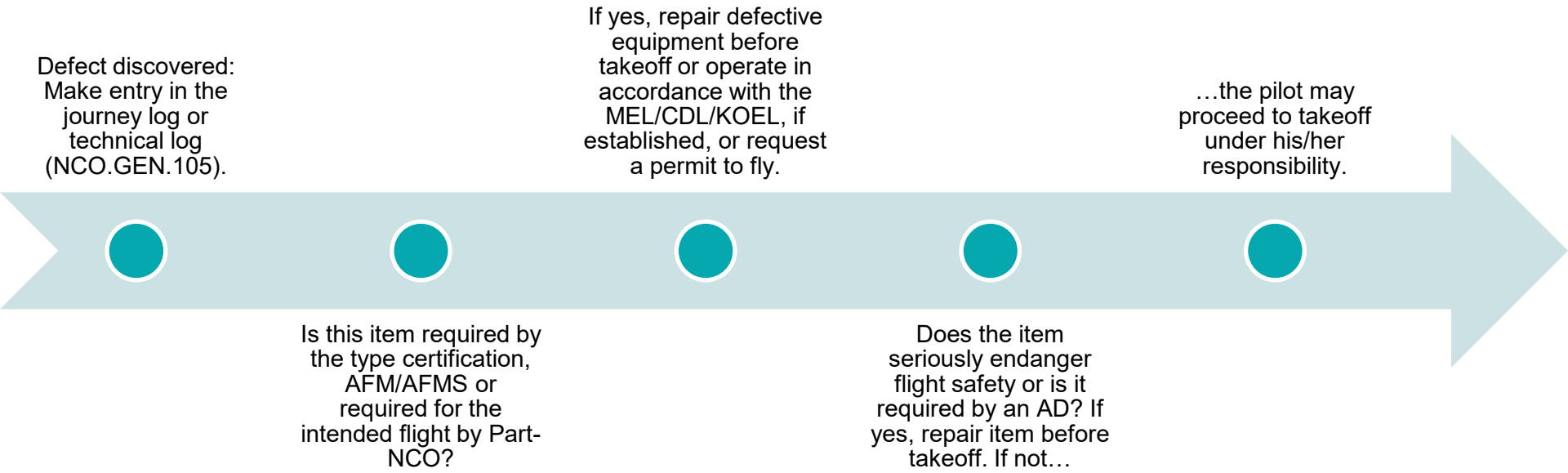
Example case: Cessna 170A

Certification Basis (Basic Equipment)	Type Certificate Data Sheet (TCDS)	POH/AFM, AFMS (STC, CS-STAN)	Airworthiness Directives (AD)	Part-NCO
CAR 3, §3.655 • Airspeed • Altimeter • Magnetic direction • Oil pressure • Oil temperature • Tachometer • Carburetor air temperature, for altitude engines if capable of heat rise >60°F • Coolant temperature if liquid cooled • Cylinder head temperature • Fuel pressure if pump-fed • Manifold pressure for altitude engines • Oil quantity (measurable on ground) • Adequate source of electrical energy (generator/battery) • Landing gear position indicator • Electrical protective devices (fuses/circuit breakers) • Safety belts for all occupants • Airplane Flight Manual (AFM)	TCDS Example A-799 (Cessna 170A with serial numbers 18730 through 20266, exept 19401): • Item 1(a): Propeller • Item 103: Carburetor air heater and mufflers • Item 201(a): 2 Main wheel-brake assemblies • Item 202(a): 2 Main wheel tires • Item 204(a): Tail wheel assembly, steerable • Item 402(a): CAA approved AFM for the particular model, serial number and landing gear installation For night flying: • Cabin dome light and instrument lights or equivalent	The POH/AFM usually provides a list repeating the equipment required by the TCDS and may contain a kinds of operations equipment list (KOEL), a configuration deviation list (CDL) or minimum equipment list (MEL). AFM Supplement (AFMS): When an aircraft is changed based on a supplemental type certificate (STC) or certain standard changes (CS-STAN), a supplement will be added to the original AFM. Example: Installation of a Garmin GTN 650 STC. The AFM is supplemented with an AFMS. It specifies IFR capabilities when the following equipment is operational: • 1 external HSI/CDI/EHSI	For example the Cessna seat-rails must be operational and be inspected at certain intervals (AD 2011-10-09). Airworthiness Directives (AD) (admin.ch)	VFR day: • Magnetic heading • Time, in hours, minutes and seconds (installed or wrist watch) • Barometric altitude • Indicated airspeed Night: • Operating lights at night, NCO.IDE.A.115 • Turn and slip • Attitude • Vertical speed • Stabilised heading • Indication of inadequate power to gyroscopic instruments • Pitot-heat IFR: • Outside air temperature Operational conditions / airspace • Spare fuses, supplemental oxygen, fire extinguishers, ELT or PLB, floatation devices, survival equipment, radio, navigation, transponder or conspicuity devices (SERA.6005)

What if an aircraft cannot comply with a Part-NCO requirement?

- Example: The tight cockpit of an annex I tandem aircraft leaves no space to retrofit a fire extinguisher, which is required by Part-NCO for airplanes heavier than 1’200 kg MTOM.
  - The operator (private owners, etc.) shall declare this discrepancy to the FOCA.
  - Approved operators (AOC): This discrepancy requires approval by the FOCA.
- Conditions: Technical compliance with the standard would have to be unreasonable and the safety standard must be achieved by other means.
- Contact: SBFF@bazl.admin.ch

Inoperative equipment (Part-ML): PIC decision sequence



Applicability ML.A.403: Aircraft under Part-ML (aeroplanes up to 2730 kg MTOM, rotorcraft up to 1200 kg MTOM / max. 4 occupants, and other ELA2 aircraft).
Pilots of aircraft under Part-M (M.A.403) cannot defer defects, unless an MEL is used.
Defects other than equipment (e.g. a missing rivet, a dent in the aircraft skin) may only be deferred by the pilot with the agreement of the owner, CAMO or CAO.
The PIC should carefully evaluate if a safe flight is possible (PIC responsibilities, NCO.GEN.105).

Safety considerations

- Before operating with inoperative items, the pilot should carefully evaluate the safety of the flight (PIC responsibilities, NCO.GEN.105), taking into account all operational considerations of a defect or multiple defects.

- If appropriate certifying staff is readily available, the pilot should consider consultation with them before deferring any defect.

- Deferred defects should be rectified at the next appropriate maintenance event and within the limit specified in the maintenance data.

«Technische Mitteilungen (TM) mit operationellem Zusammenhang»

- TMs for flight operations are superseded by Part-NCO.

- The applicability of these TMs is now limited to annex I (non-EASA) sailplanes and balloons. The TM documents and GM/INFO Part-NCO are currently being revised.

Glossary and links

Minimum Equipment List (MEL)	The term MEL means a document listing items that may be inoperative during flight for a specific aircraft. An MEL may be established in accordance with NCO.GEN.155. When an aircraft has installed equipment which is not required for the operations conducted, the operator may wish to delay rectification of such items for an indefinite period. Such cases are considered to be out of the scope of the MEL, therefore modification of the aircraft is appropriate and deactivation, inhibition or removal of the item should be accomplished by an appropriate approved modification procedure. The MEL is an alleviating document having the purpose to identify the minimum equipment and conditions to operate safely an aircraft having inoperative equipment. Its purpose is not, however, to encourage the operation of aircraft with inoperative equipment. It is undesirable for aircraft to be dispatched with inoperative equipment and such operations are permitted only as a result of careful analysis of each item to ensure that the acceptable level of safety, as intended in the applicable airworthiness and operational requirements, is maintained. The continued operation of an aircraft in this condition should be minimised.
Configuration Deviation List (CDL)	A CDL is a list of externally exposed aircraft parts that may be missing for flight. A CDL allows continued operation with missing externally exposed nonstructural parts by defining restrictions, limitations, or performance penalties, while the aircraft remains airworthy. A typical example on many aircraft would be wheel fairings.
Kinds of Operations Equipment List (KOEL)	Aircraft certificated under 14 CFR part 23 may have a KOEL. The KOEL specifies the kinds of operations (e.g., VFR, IFR, day, or night) in which the aircraft can be operated. The KOEL also indicates the installed equipment that may affect any operating limitation. Although the American certification rules require this information, there is no standard format; consequently, the manufacturer may furnish it in various ways. Inoperative equipment, when required by the KOEL for a particular type of operation (e.g., VFR, IFR, day, or night), may not be deferred for that operation under Part-ML and Part-NCO.

- Part-NCO: Easy Access Rules for Air Operations
- Part-M / Part-ML: Easy Access Rules for Continuing Airworthiness and EASA Opinion 05/2016 for further context
- BAZL Website: Technische Mitteilungen mit operationellem Zusammenhang
- For further general information, however only applicable to N-registered aircraft, refer to FAA AC 91-67A Minimum Equipment Requirements for General Aviation Operations